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Telephony.

AN ILLUSTRATED MONTHLY TELEPHONE JOURNAL

VOLUME II. NUMBER 5. CHICAGO, NOVEMBER, 1901. TEN CENTS A COPY. ONE DOLLAR A YEAR.

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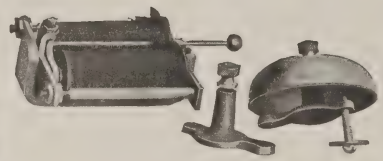
ALL
PARTS
INTER-
CHANGE-
ABLE.

NORTHPHONE FOR QUALITY



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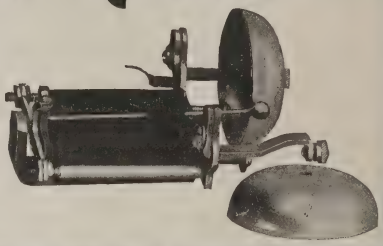

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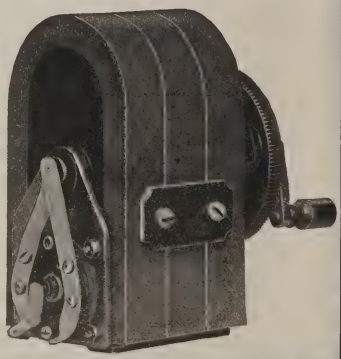
NOT HOW CHEAP
BUT HOW GOOD

They Never Wear Out

Our Magnets
Are Permanent.
Laminated Armatures
give us
GENERATORS

WITH

MAXIMUM OUTPUT



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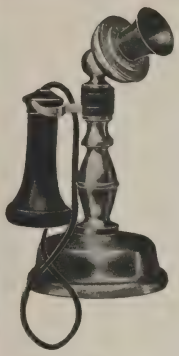

ALL KINDS OF
DESK 'PHONES
CRANE SETS and
CORNER CABINETS

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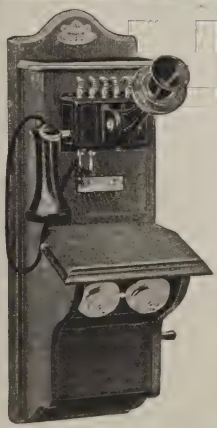
AND MEASURED SERVICE TO

DOUBLE YOUR INCOME?

STOP THAT NUISANCE

NO PAY **DEADHEADS**

DIVIDEND PAYERS



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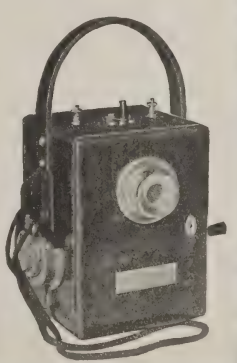
FOR A TELEPHONE

If you would "Win Thee Favor" from patrons and friends buy for

BEAUTY and EFFICIENCY

We Make EVERYTHING
IN EXCHANGE APPARATUS



WRITE ABOUT YOUR WANTS

69 79 Frankfort St., CLEVELAND

(From the Buffalo Courier, Thursday, Oct. 10, 1901.)

Santiago
seases.
Felipe, flaxseed.
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Santiago,
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cotton.
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lago, alfalfa

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tobacco.

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to-

GOLD MEDAL!

Extract From Report of Pan-American Jury of Awards, *Division X Electricity.*

STROMBERG-CARLSON TELEPHONE MFG. CO., CHICAGO, a Gold Medal for Telephone Exhibit and Service:—

Bell Telephone Beaten!

The telephone system in use at the Pan-American Exposition between the officials and the various buildings throughout the grounds, installed in opposition to the Buffalo Bell Monopoly of this city, has been a marked success and of great value to the users. It is said that the service over the new Independent System is far superior and more convenient and rapid than on the old company's exchange. The new system is provided with the latest type central energy instruments.

The plant was installed at the opening of the Exposition by The Stromberg-Carlson Telephone Manufacturing Co., Chicago.

The switchboard of the system is located in the exhibit of the manufacture. It is reported that this company manufactures more than 100,000 instruments annually for independent exchanges for large and small cities.

Gold Medal for exhibit of a Model Telephone Exchange, and for its Service on Pan-American Grounds.

Go
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San Juan I
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Jimenez, Simo
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STROMBERG-CARLSON
"CENTRAL ENERGY"
TEL. MF'G. CO. CHICAGO.
70-82 W. JACKSON BOUL'V'D.

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INTRODUCES
THE
INTERNATIONAL
TELEPHONE
MFG. CO.
HARRISON & CLINTON
STREETS
CHICAGO
Chicago
ENGR'G CO.

Telephony.

AN ILLUSTRATED MONTHLY TELEPHONE JOURNAL

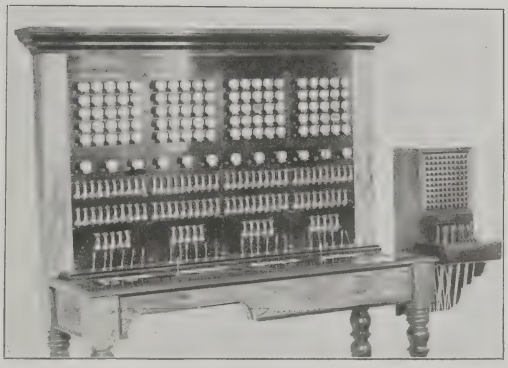
VOL. II. CHICAGO, NOVEMBER, 1901. No. 5.

THE STORY OF ILLINOIS.

BY J. E. KEELYN.

The history of Independent telephony in Illinois really encompasses the early history of Independent telephony in the United States. While I will not claim Illinois as its birthplace, this state was, no doubt, the cradle of telephone liberty. I am addressing myself particularly to the present era in which anti-Bell monopoly succeeded, beginning, so to speak, with the expiration of the so-called "fundamental Alexander G. Bell telephone patent," March 7, 1893, and its famous "rider" Bell patent, which expired January 30, 1894.

The limitation placed on me will not allow of time for research for much data not now in mind, nor any extended reference to the earlier history of telephony in Illinois. Therefore, I will resort to memory and trust to another time for such an extended history as should be recorded of the noble work, the self-sacrifices, the patience under disappointments and oppressions, and unpurchasable loyalty of that little band of mortals who nursed and guarded Independent telephony until it became self-sustaining. Ah! painful even are the recollections of those days of suffering, of "hope deferred and the heart made sick." It does not detract from the virtues of those of you now enjoying the grand success and prosperity of Independent telephony, to say that few of you would have willingly gone through the arduous and discouraging tasks of its pioneers. It is indeed a wonder that any of them should have survived in prosperity, for the tyrannical Bell monopoly set its mark upon each and every one, pursuing them with a relentlessness unparalleled in commercial history. The Bell monopoly seemed to believe itself the sole owner of the "natural monopoly," as its hirelings and orators were wont to call the telephone business. The unnatural "parent company" at Boston treated telephone evolution with scorn and contempt, and literally "spanked" its licensee companies for allowing such "nonsense" to occupy its time. The Independent movement would not down, however, and the Beaneater from Teapartyville became wrought with exasperation. "Not because our 'natural monopoly' is threatened," they allowed, but because their coupon-clipping parties and "watermelon" and dividend soirees should give rise to "impertinent" questions by the public and "curiosity seeking" newspapers on matters that were the "original inventions" of Alex. the Great, Berliner and others, successors and assigns, down to Watts-son (of hot-air fame) and Roosevelt (no, not the president—they did not claim to own him), Scribner, et al.; all of which was simply ding-a-ling to the Bell unnatural, affecting its "rights in the premises" according to the "character and gender of the subscriber thereto."



TYPES OF SWITCHBOARDS USED AT DECATUR, ILL., IN THE FIRST EXCHANGE.

Therefore, an irade was issued by the Sultanic Beaneater of "natural monopolism," that thenceforth and forthwith these "pauper and presumptious aspirants" to telephonic pretension, must be "stamped out," blacklisted and destroyed, socially, financially and commercially! Further, that all those having thoughts of a telephone, other than to pay rental or tolls for it (when not swearing at the abominable service) must be "scared out of their transmitters" or into receivers or "any old way," including patent suits—but they must be scared, frightened, alarmed, threatened, bulldozed, intimidated, etc.!

Those of you who were not a part of the "pioneer push" cannot realize what the full meaning of these things was, nor can many of those pioneers give you an adequate impression of the big book on "telephone troubles and how not to find them," each could write of his 1892-1895 experiences. Our latter-day "pioneer" can sit at a banquet and eat from the fullness of Independent prosperity; he can respond to the toast of "how we licked 'em;" he can tip the glasses to the "mistakes of early construction," and tickle the convention with his dissertation on the poor "character of apparatus and engineering of many early telephone exchanges," but you can lay it away in your safety deposit that most of these oratorical educators are "buzzy in the rim" on early information and were not present to make things perfect when Massachusetts Bay Pasha read his irades.

It is not the art of "chief engineers" nor abundance of capital employed; neither is it the consolidation of ideas or systems, nor other commercial manipulation, that Independent telephony has recorded in Illinois history as marking its success. It is rather a few simple principles: Loyalty, Steadfastness and Tenacity of Purpose. These, in the few pioneers referred to, not only, but also in the public—that public which had been long suffering at the hands of an arbitrary and oppressive monopoly. It was the effect of these principles employed by these pioneers that found echo in the hearts of the people who supported and suffered with them on such service and with such apparatus and facilities as

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J. ABRAHAM.


F. H. ALDEN.


P. E. ALLISON.


M. B. AUSTIN.


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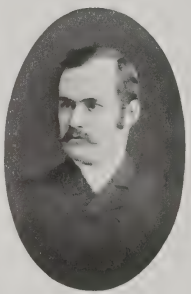
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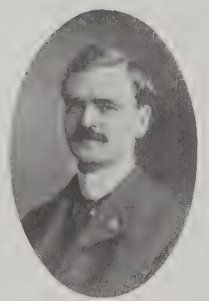
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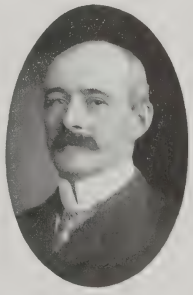
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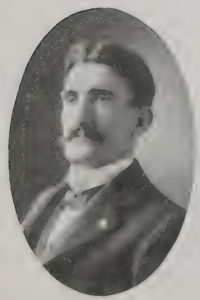
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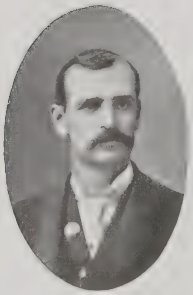
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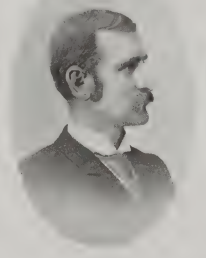
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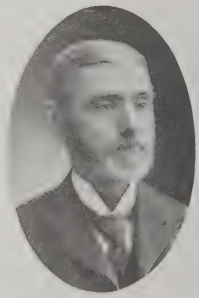
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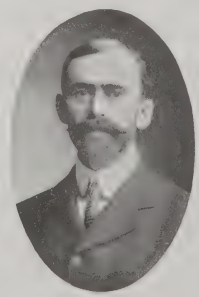
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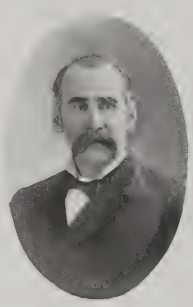
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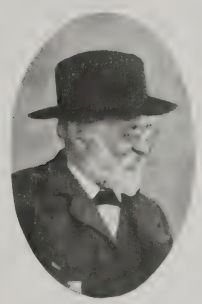
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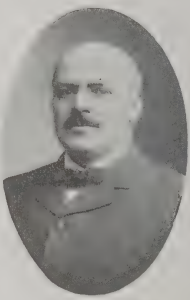
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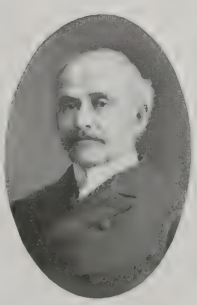
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HENRY C. STRONG.

(Continued from first page.)

was at the time available and upon the promise of freedom from the restraint of monopoly in the process of time. It may not be amiss for some of our present Napoleonic chiefs to mark well the past record on which the Bell monopoly was overthrown, and not wander too far from the fields of promise then cultivated. In those days I distinctly recall the slogan of the Independent as "home industry" and "local enterprise" and the promise of "keeping the telephone earnings at home to be spent among our own people," etc.; of "local ownership and local responsibility," with the sacred and oft-pledged obligation of not "selling out." Perfection of instruments, model construction and comprehensive talent and ability of "commercialism" has failed to stay the disintegration of the Bell monopoly. Alex. the Great was great on harmonics, but he failed to invent (or his Teapartyville Chambre de Commerce have not yet sufficiently patented) an instrument that will transmit and receive the public pulse. The public pulse beats anything and it's a good thing to tune to. After several more of these "latter-day pioneers" syndicatize broad sections of Independent telephony, municipal ownership will become as popular and much at home to telephone exchanges as a Ruben County farmer is on the unopened end of a country store mackerel barrel.

It would seem, however, that some more defined data on Illinois telephone history should be given attention. To do this intelligently we must refer to earlier history briefly.

Many years ago various persons claimed to have invented the telephone. Du Monsel, a Frenchman, half a century ago literally wrote a description of the present form of telephone. Phillip Riess made some experiments. Cushman claimed to have used an instrument by which persons "heard frogs croak," etc., in the country not far north of Chicago. James McDonnough of Chicago, in 1876 and earlier, gave proof of a telephone he made and used, and he was awarded precedence over Bell in the United States patent office on a telephone receiver. Mr. McDonnough told the writer that it was through trickery in the course of the Supreme Court proceedings that on a technicality he was debarred from gaining his rights. Henry Strong of Chicago shows early proofs of telephone inventions, in fact prior to Bell. Mr. Strong certainly showed more knowledge of the importance of the Berliner patent than the Bell monopoly did in its infancy. When the Berliner patent models were sold by the patent office, Mr. Strong bought them for a small sum, the Bell people not considering the patent of sufficient value to buy the models. In later years they tried to buy the models, offering Mr. Strong at one time $500 for them. It is due to his loyalty to the Independent cause that he refused the offer, although sorely in need at the time. The Bell people could not have overcome this character in him and others at that time for any amount of money. He felt that it was a sacred charge of his to keep for possible litigation later on the Berliner patent. In order to keep it secure the writer had it placed in a safety deposit vault, paying the charges which Mr. Strong could not afford. The models were prima facia evidence that the Berliner invention as originally presented to the patent office were inoperative. Elisha Gray was another Illinois man who contributed much to early telephone history.

After Bell, Edison, Gray, Dolbear, Drawbaugh, McDonnough, Cushman and other telephone inventors had formed large companies for exploiting their respective "original telephone inventions," litigation followed between the various interests. Most of this referred to the "original" Bell 1876 patent. In one of these cases a reference was made to the "second Bell patent," that granted January 30, 1894, covering most particularly and broadly the receiver or metal diaphragm type of magneto telephone. The patent was not the subject of litigation in any sense at the time, nor was it referred to by counsel or court until years after the great telephone cases were decided by the Supreme Court of the United States in 1888. In these cases the issue was confined to the precedence and validity of the "original" Bell March 1, 1876 patent. It is a most extraordinary and singular thing in this connection, however, that Justice Gray took up and passed favorably upon the claims of the January 30, 1877, patent, thus closing all chance of its being subject to question thereafter in the courts below. The only time the validity of this patent was the subject of real litigation was in a suit brought by the Bell company against the writer and the company of which he was then president in the year 1893, before Judge Jenkins in the United States Circuit Court at Chicago. The attention of the court was called to the fact that the scope and validity of the patent had never been at issue; that it was simply "sneaked" into the Supreme Court in the other cases and that we had a right under the law to a trial on these points. Judge Jenkins said that the mere fact that the Supreme Court had passed upon it would prevent him from allowing it to be questioned. He granted a temporary injunction against us and we demanded a statement of the reasons therefor. He gave eight reasons, the first of which was: "The principle of the telephone is the invention of Mr. Bell," etc. We took an appeal and in one of our main points sufficiently answered Judge Jenkins, viz.: The United States Supreme Court had held unanimously that "a principle could not be invented." With fair assurance of a reversal, the Bell attorneys proposed to us that "they would pay all costs and dismiss the case," and as this was tantamount to a victory for us we did so. This case was fought bitterly and I can well recall remaining up all night with an attorney at the printing office, where we read the proofs of briefs, etc., which were abitrarily demanded in court by 10 a. m. next day, and which took all night's work to get ready. There wasn't much banqueting in those days, either, for few had the price then to dare that luxury, and most of them had entertainment and excitement in the briefs of lawyers and the briefs of groceries and meats for family use. I have a distinct recollection of one "excitement:" Judge Storrow, for the monopoly, had just finished an argument filling Judge Jenkins' mind full of the beauties of Bell's gifts to posterity, in the shape of pieces of soft iron, electromagnets, permanent magnets, rubber shells, diaphragms, diaphragms and diaphragms and a thousand other things which it took him a half day to tell the court about in his subtle, magnetic, fifty-thousand-a-year and ocean yacht with six months' vacation manner. The judge acknowledged his interest and entertainment. Another attorney acting for the defense started to match his sheepskin against Storrow's gold beaters skin diaphragm. A few statements showed that he was "mixed in his signals" on telephony. The air in the courtroom seemed "blue" and oppressive to the little bunch of Independents present. The mysterious environment in which the telephone had been kept was shown in the lack of knowledge of a lawyer untrained to discuss its intricacies. It was at this point that I took up the argument in the case and began handling the Bell Company and its attorney in much the same way as one who knows me can best imagine, when the court stopped me with the admonition: "Oh! Oh! Please don't get so excited," after I had struck the bar a blow with my fist which evidently shocked the court's diaphragm.

Independent telephony began its new era in 1892 and struggled through a perilous existence until February, 1894, when it broadened out rapidly throughout the country. In 1893 every existing concern which had started in opposition to the Bell Company had been enjoined by the courts through Bell patent suits. In Chicago the Cushman Telephone Company, Brown Telephone Company the Western Telephone Construction Company and a number of others had started to develop the business. In 1892 the writer had obtained a number of franchises and rights for telephone exchanges. After forming some companies to operate them, no one was found that could furnish the apparatus. The instruments had to be purchased abroad and imported into this country with great care—"cash with the order." The first pair of telephones we sold in 1893 went up into Michigan. The banker who bought them paid $50 each for them. The regu-


ROB'T. SWEARNGEN.


S. S. TANNER.


FRANK B. TAYLOR.


W. A. TAYLOR.

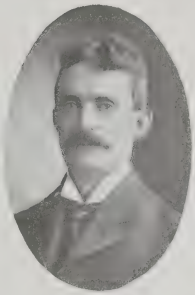

W. P. THOMAS.


W. W. TOWNSEND.


T. C. TROY.


E. H. VALENTINE.


JOHN WAGNER.


E. J. WALSH.


A. D. WATSON.


THOMAS WELSH.


F. H. WHEELER.


G. S. WHYTE.


J. R. WILEY.


G. D. WINTER.


A. T. WOOD.


C. H. WORCESTER.


E. E. YAXLEY.


FRANK ZINNELL.

lar price of a complete telephone of the Blake transmitter type in 1893 was $30, while the importing cast was about $22, duty and all. In 1894 the selling prices were from $18 to $25. In this year the greatest fear was from the Edison carbon telephone patent, and the manufacturers conservatively kept to a magneto form of telephone. Later the Supreme Court decided against the Bell Company on this Edison patent, and then advertised the Berliner as controlling the microphone transmitter. This, however, did not deter the manufacturers generally from putting microphones on the market. It is a singular fact and seems strange to believe to-day, but in 1894 thirteen magneto telephone exchanges were sold by us for shipment into Texas alone, only one going into Indiana (Decatur) and none into Ohio until much later. So that two of the present most developed Independent telephone states, viz., Ohio and Indiana, were behind Illinois, Texas and Iowa and other states in beginning. In these early years Chicago was recognized as the source of Independent telephony. The first successful telephone exchange established in Ohio was that of our Chicago magneto telephone shipment of sixty-five instruments for Van Wert, Ohio. The Bell Telephone Company (Central Union) had previously abandoned Van Wert as unprofitable, removing their sixty-five telephones. The new company started with the same number at less rates, found it profitable and continued to grow to several hundred at present. This exchange employed magneto telephones for a long time. It is referred to as indicating the disposition of the public to "put up with deficient service even" to get rid of the "monopoly."

In the year 1894 the Bell people brought a multitude of patent suits against the various Independent telephone companies then in existence under what was known as the Watson and Roosevelt patents. These patents broadly covered the present forms of telephone switch hooks. The Bell people took pains to widely advertise the scope of these patents, admonishing the public against the Independents as "alleged infringers" and assuring its stockholders in published reports of its confidence of prolonging the telephone monopoly through these patents. Retrospectively speaking, no "patent dangers" ever appeared more threatening to the principal manufacturers, dealers and users of telephone apparatus. The suits on these patents were the most vigorously conducted of any in the history of the present era of Independent telephony. In the case of the Watson patent, the Bell Company had procured a great number of favorable decisions, nearly all of the eastern manufacturers having submitted to injunctions either after trial or by default. The largest manufacturer in the East, having submitted to a default injunction by arrangement, paid the $300 damages stipulated only a few days previous to the famous decision on this patent in favor of the writer and the Western Telephone Construction Company, of which he was then president, before Judge Showalter in the United States District Court in Chicago. We received the congratulations of most of the fair-minded people engaged in Independent telephony at the time of this great victory. And to the measure of importance "thereby hangs a tale." During the process of the litigation and about the time that arguments and briefs were made, the attorneys for the Bell company submitted to our attorney a most remarkable proposition, to say the least. Our attorney reported that the Bell company's attorney proposed to us that we stipulate a settlement of the case by the entry of a default judgment, insuring to the Bell people injunctions against all other concerns in the business, which, it was acknowledged, would result in the event that we did as proposed. The proposition included a "satisfactory understanding" that we could continue in the use of the devices without further interruption and the alluring suggestion was opened to us that all other concerns would be enjoined as alleged infringers and we alone among the Independents would have the benefit of manufacturing and dealing in these devices so necessary to the business. From many points of view the proposition was seductive. It was only after heated arguments and stubborn resistance on the part of the writer that the other officers of my company did not prevail in the acceptance of the proposition referred to. The proposal only inflamed my distrust of them and aroused me to vigorous action in connection with this suit. I was determined to win it if hard work and the money at my command could accomplish it. We located a Canadian patent of Watson's upon the same invention which had expired and therefore terminated the legal life of the American patent. The certified copies of this Canadian patent were filed with Judge Showalter and the result of it was like throwing a bombshell into the Bell camp. At first the Bell attorneys protested ignorance of the Watson Canadian patent, alleging that Watson had privately taken it out without their knowledge. These statements were disproved by our certified documents with the signature of the Bell Company's attorneys attached thereto. There is no doubt in my mind that this case was a gigantic swindle and fraud on the part of the Bell people. It does not seem proper for me to write more fully of the trials and tribulations that the real pioneers of Independent telephony underwent in the legal and commercial strife brought about by this Watson patent. Others can tell as well of the feeling of relief and the new hope and life given to Independent telephony in this victory for it.

Another patent of extraordinary importance was the Roosevelt patent. The defeat of the Bell monopoly upon these patents in the decision of Judge Grosscup in the United States District Court of Chicago came like a shock to the monopoly. It was likewise a complete surprise to the Independent telephone people. This patent was broadly claimed to cover the action of the switch hook in automatically changing the circuits through the action of taking off and replacing the receiver. No one at the time seemed daring enough to openly sell the apparatus claimed to be covered by this patent. The victory for the Independents in this suit gave renewed hope and reassurance that Judges Grosscup, Showalter and other jurists of this United States circuit were not tainted with Bell monopoly suspicion. You cannot comprehend at this time how far-reaching this feeling of security under the laws was extended by these decisions; previously, suspicions and rumors of the monopoly's bribery and "influence" were the rule rather than exception, in discussing the chances of a legal fight with the Bell people. Whether these suspicions were just or unjust, it is not for me to dwell upon at present, but the United States District Court of Illinois was then clearly determined as beyond doubt of its integrity.

About this time the famous Berliner patent "bugbear" was raised by the United States government. This unfortunate proceeding only served to prolong the life of this fraudulent patent scarecrow for years and retarded the progress of the new Independent movement more than any other one thing in its history. If it had not been for this government suit the issue would necessarily have been raised and determined several years ago, instead of during the last year. It is my opinion that the Bell people never had any hope of winning the Berliner patent suit upon its merits, and the history of litigation upon it seems to prove that their whole effort was made to prolong a decision of it. The reasons for this seem obvious. The effect of this patent in frightening off capital was quite as sure while it was in doubt, as if unquestioned, within the power of such a gigantic corporation as the Bell monopoly to make use of it.

A great many other patent suits were brought by the Bell people in the Chicago and Illinois courts against Independent telephonists, these later suits having been uniformly decided in favor of the latter.

* * *

The growth of the Independent telephone business of Illinois is quite as prodigious as that of any of the states. This is not so marked in the larger cities, for in respect to big operative telephone exchanges Illinois is behind many of the states. The principal cities of Illinois have not yet been honored and benefited by the competition of anti-monopoly systems, although nearly all unoccupied territories have or-

ganizations now building or about to build. Chicago is the headquarters of the Central Union Telephone Company, which largely operates as licensee of the Bell company, the monopoly's business in Illinois, Indiana and Ohio. The Chicago Telephone Company operates all of Cook county (except some long-distance lines) and several cities and counties in northeastern Illinois, extending into Lake Geneva, Wis. Such stock and securities of these two companies as is not owned in Boston is largely owned in and about Chicago. The influence of these interests has therefore been more effective in Illinois' larger cities than in cities of states more removed. The Western Electric Company, the Bell Company's big manufacturing concern, which produces nearly all of its telephone apparatus for the entire world, is located in Chicago, and here is held nearly 40 per cent of its several millions of capital. These interests have been able heretofore to effectively antagonize Independent or competitive action through political, social, financial or commercial agencies. Until recently an "Independent telephone man" was of as little interest to swell society as an old blanket at a new horse show; his best hope of political advancement was to serve as juror at the coroner's inquest on a "floater," and unless the demised article was "unknown" the Independent's eligibility might be in doubt; in "financial circles" he was simply considered "too hazardous for credit," or an "erratic visionary" with a "fool idea of fighting the Bell system;" commercial interests doubted his business ability and questioned the prospects of his experience when pitted against that of the heirs of Alex the Great, Beaneater from Teapartyville. In such environment there was necessarily slow progress, and Chicago, Peoria, Springfield, Rockford and other large cities have been the scenes of considerable strife or disappointment, while in some instances the ordinances granted were immediately bought up by "the Bell." However, there is more activity in these larger Illinois cities at present than elsewhere in the United States among Independents.

In manufacturing telephone apparatus Illinois leads the world. Chicago alone manufactures more telephone apparatus than all of the earth outside of it. Illinois produces nearly all of the Bell telephone apparatus, and makes over 70 per cent of that used in the United States by Independents. Chicago furnishes about 65 per cent of the Independent telephone apparatus exported to foreign countries.

There are seventy-one (or more) manufacturing concerns in Chicago engaged largely in the manufacture of telephone apparatus, and thirty-two concerns or individuals are assembling parts or selling the product of others. This does not include the construction material or supply houses, of which there are the surprising number of 94. There are 212 "promoters" of Independent telephone enterprises in Chicago and about 700 in the state of Illinois. The various Independent interests of Illinois give employment to over 11,000 people, while those engaged in operating exchanges, toll lines, construction work and other kindred branches or as stockholders or officers, is computed to exceed 15,000 persons, of whom nearly 2,500 are females.

The Illinois manufacturers of telephones are just now producing at the rate of nearly 500,000 telephones per annum, and nearly 700,000 "drops" switchboard capacity. The present rate of production of its telephone manufacturers exceeds the enormous value of $9,000,000 per annum. It is not known what the value of Illinois sales of kindred goods amounts to, but my inquiries have led me to approximately estimate about $2,000,000 to these departments. The aggregate capital stock chartered by Illinois telephone corporations exceeds $300,000,000! However, a great deal of this represents the "has beens." One corporation, the Harrison International Telephone Company, was incorporated for $80,000,000, and several others for $5,000,000 or more. In Independent telephone history the rule has been: "The larger the capital stock the smaller the net practical results and the less success attending such ventures." There are in this state over eight hundred chartered concerns dealing in telephones or things akin thereto. Within the past few years the business has been somewhat subdivided, and it now has its distinct concerns engaged exclusively in promoting, manufacturing, assembling, constructing, furnishing one or several of the various appliances, supply houses, pole dealers, telephone bankers, bond dealers, newspapers, printers, etc. There are over 3,000 distinct interests in Illinois catering to the Independent telephone trade.

The number of Independent telephone exchange companies reported in operation exceeds 600; of these less than 500 are of much pretension. There are twenty-three special construction companies and 256 buyers and dealers in telephones for retailing to rural buyers (outside of Chicago). There are 200 toll line concerns operating over 760 toll lines; of these about 100 being of great pretension and the balance mostly rural lines. In the matter of rural toll lines Illinois ranks far ahead of any state in the Union or any place on the globe. Sweden, which has been so much talked about, is well supplied, but is no more to be compared with Illinois in this respect than the number of "paying subscribers" is to "free telephones" in a Bell exchange at an "Independent" town. Outside of Chicago (which is only "rural" in its Rueben-like attitude, telephonically), in the counties of Illinois, "farmers' telephone lines" are strung as thickly as gravy about a Thanksgiving turkey, and they are appreciated as much, too. Nothing in the history of social development has created such marked and favorable results to farmers as the rural telephone lines, which, together with the postal rural free delivery system, has given a new life and zest to country homes, actually evolutionary in character. In many instances every single farmhouse on a ten-mile line between two villages is connected by telephone. This opens up the outer world, particularly to the children of each household. This is evidenced by the formerly metropolitan phrase "rubber necking," as now applied to the urchins (young or old) who persistently "listen in" to conversations going over the lines. But to figures! It is estimated that there are 70,000 farmers' homes furnished with Independent telephones in Illinois, which will be added to by 25,000 more this year. More than half the telephones "consumed" in Illinois at present are for farmers' use. To connect those already in nearly 100,000 miles of wire is used, of varied size and manner of construction. Many of these lines are superior to the Bell which they parallel; some would put to blush the "electrical engineer's work" of a few years ago, while others are strung from house to barn or windmill or other convenient elevation, through trees, etc., and a few of them are hung along fences like a chain of Emperor William's moustaches. Yet they all "talk" well or do for "rubber necking."

The public exchanges of Illinois utilize at present about 50,000 telephones through the several hundred "central offices" mentioned. It seems fairly estimated that next year will add 20,000 to 30,000 more to this. The mileage of wire now in use is about 30,000. This includes the local metallic circuit and single wire. There is about 10,000 miles of long-distance wire not included in this calculation. The amount of capital that has been invested in these exchanges, toll lines, rural lines and farmers' lines is variously estimated between $3,000,000 and $8,000,000. My reports from throughout the entire state seem to approximate $4,000,000, and it may exceed these figures. The work in prospect for this year will apparently more than double this amount. The reports show preliminary work contemplating over $20,000,000, but it is my impression therefrom that about one-fifth, or $4,000,000 additional, will be materialized. This is a vast amount of business in any particular field of industry, and is an indication of the success and prosperity of Independent telephony. Most of these enterprises have much more than surpassed the expectations of their founders. Many of them are paying extraordinary returns on the investments. This is quite as true of places where the rates are surprisingly low as in others where the rate is twice in amount. A peculiar condition has been shown in the experience of toll lines. In some places a very low rate has proved far higher in profits. Several reports mention that where the rate of 25 cents per message only

paid fairly, the reduced rate to 10 cents per message paid threefold profits over the former rate.

Illinois is to be congratulated on several characteristics of its "Independent telephone people." They have worked harmoniously together, as a rule, and seldom invaded each other's field of operation. None of them so far has attempted to be the whole thing, and very few have chanced to expand the scope of their "developing" into Napoleonic channels. Some years ago "large interests" were "going to control everything but the Bell," but these have "rung off." There have been many changes in the personnel of those engaged in this growing industry. Some of those names we often heard mentioned are now engraven on tablets above two date marks; others have grown weary by the wayside of work and their tools are now incased under other labels; many have developed from obscurity to prominence, from poverty to wealth, and the like; few but have gone through a dozen reversals in the period referred to. However, it is a great satisfaction to realize that most of the "Independents" have remained independent, and very few of the monopoly's scavengers and traitors have found opportunity for their services in this free work. Where a former Bell hireling has entered the Independent field he has not found himself subject to vilification on his past record, even as he probably deserved. The movement is too progressive; the men in it are making history and the future will attest the same old adage, "the survival of the fittest."

If I should attempt to suggest to you who have recently joined the Independents, names of those now prospering (or those lacking in prosperity), who have achieved distinction or have had it thrust upon them, I would need more space and time. Most of them are honored, either by the friendships of many, the fame of success or the peace and solace of good health and a happy home, while some are in need of these things which others have in surplusage. One hundred and fifty years from now it won't make much difference to any of us; so, therefore, let us try to guide our actions toward each other at present, so that we can reconcile them to our future condition, but "whether or no," let us at any rate remain "Independent!"

* * *

In 1894 one of the first large exchanges of Illinois was established at Decatur. At first 300 instruments of the Harrison International Telephone Company were installed, together with four 100-drop Utica type switchboards, similar to the larger of the two switchboards shown in the cut on front page.

Later these switchboards became the subject of patent litigation and were finally changed to the smaller type shown in the cut, eight of which of 100 drops each were installed. These were recently changed and enlarged. This exchange, although crudely built at first, and depending upon the "experimental" apparatus then obtainable, persecuted and worried by the "monopoly" in every way, has managed to move along and continue in control of its field.

Decatur, Ill., and Decatur, Ind., and Chillicothe, Mo., were the first "large" Independent exchanges in their respective states.

The story of one of the Independent telephone exchanges is the story of most of them, and the experience of those who established them is not materially different, so far as meeting the "competition" of the monopoly is concerned. Early apparatus was necessarily experimental and exchange managers had to feel their way along on such as could be bought. The Bell people at first tried to intimidate subscribers by threats of legal prosecution; fought against granting Independent franchises; gave cut-rate or free service; interfered with rights-of-way; intimidated its financial backers; prophesized failure and other things.

The net result has been uniformly the same. Such cities as Mattoon, where there was only one Bell telephone in 1895, now has about 500 Independent telephones. Other places where there were none or but few Bell telephones, there are now great numbers of Independent telephones. The average rate to subscribers is now less than one-third what it was, and the extent of service for said rate is three times as great. The telephone user is therefore nine times as well off, pecuniarily, while the character of service is many times better.

Under the Bell regime in Illinois telephones installed averaged about one telephone to every 200 people in its local exchange service. The Independents have astonished the monopoly by providing an average of one telephone to every 20 people in the local exchanges operated by them. The policy of one was to gain more income by increasing the rates; the other by increasing the service.

There are now outside of Chicago double the number of Independent telephones that there are Bell. The former is now firmly established and intrenched against the latter's aggressions, and prosperity and confidence now obtain among those Illinois Independents whose early work was marked by many and various hardships.

PROMINENT TELEPHONE MEN IN ILLINOIS.

SUBJECTS OF ILLUSTRATIONS.

Abraham, J., Swedish American Telephone Company, Chicago.
Alden, F. H., Alden Electric Company, Chicago.
Allison, P. E., American Electric Fuse Company, Chicago.
Austin, M. B., M. B. Austin & Company, Chicago.
Bair, S. S., Rio, Ill.
Belden, J. C., Kellogg Switchboard and Supply Company, Chicago.
Bell, F. E., The F. E. Bell Telephone Company, Des Plaines, Ill.
Bennett, I. A., Electric Appliance Company, Chicago.
Berry, L. W., Western Illinois Telephone Company, Carthage, Ill.
Blackledge, H. P., American Electric Telephone Company, Chicago.
Bollin, H. J., Lincoln, Ill.
Booth, W. P., Western Telephone Construction Company, Chicago.
Bossart, Paul W., Kellogg Switchboard and Supply Company, Chicago.
Bowman, L. G., Western Telephone Construction Company, Chicago.
Briggs, A. J., Chicago Telephone Supply Company, Chicago.
Briggs, H. L., Chicago Telephone Supply Company, Chicago.
Brooks, F. A., Charleston Telephone Company, Charleston, Ill.
Brown, Chas. A., Attorney, Chicago.
Brown, C. E., Central Electric Company, Chicago.
Brown, W. A., M. B. Austin & Company, Chicago.
Burke, W. E., Macon County Telephone Company, Decatur, Ill.
Burlingham, C. L., McDermid Manufacturing Company, Chicago.
Burlingham, F. W., McDermid Manufacturing Company, Chicago.
Burlingame, G. L., Kellogg Switchboard and Supply Company, Chicago.
Burmeister, J. C., International Telephone Manufacturing Company, Chicago.
Burns, P. C., American Electric Telephone Company, Chicago.
Burns, W. J., American Electric Telephone Company, Chicago.
Burroughs, E. R., American Battery Company, Chicago.
Burroughs, G. T., American Battery Company, Chicago.
Campbell, D. W., Western Telephone Construction Company, Winthrop Harbor, Ill.
Canmann, D. L., Eureka Electric Company, Chicago.
Carliss, Bert., American Electric Telephone Company, Chicago.

Carlson, A., Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Carney, W. J., Carney Brothers Company, Chicago.
Clark, E. L., The Valentine-Clark Company, Chicago.
Clithero, D. A., International Telephone Manufacturing Company, Chicago.
Close, J. H., Eliza Mutual Telephone Company, Eliza, Ill.
Cole, O. A., Bureau County Telephone Company, Princeton ,Ill.
Conklin, A. B., Conklin Construction Company, Aurora, Ill.
Conklin, E. R., Northwestern Telephone Company, Aurora, Ill.
Conover, Geo. W., Chicago.
Cotton, A. B., Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Craig, D. R., Conklin Construction Company, Elgin, Ill.
Cregier, N. Banks, Municipal Signal Company, Chicago.
Crihfield, R. C., Mutual Telephone Company, Minier, Ill.,
Crumb, W. H., Chicago.
Cushing, L. H., Illinois Electric Company, Chicago.
Cutler, L. E., Abingdon Telephone Exchange, Abingdon, Ill.
Davenport, H. H., Independent Telephone Construction Company, Chicago.
David, Will, Preemption, Ill.
Davis, W. M., Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Dean, W. W., Kellogg Switchboard and Supply Company, Chicago.
Didriksen, H. P., Chicago Telephone Supply Company, Chicago.
Dinsmore, S. A., Electric Appliance Company, Chicago.
Dodge, H. C., Williams-Abbott Electric Company, Chicago.
Dommerque, F. J., Kellogg Switchboard and Supply Company, Chicago.
Drake, R. H., Western Telephone Construction Company, Winthrop Harbor, Ill.
Duvall, S. A., Kellogg Switchboard and Supply Company, Chicago.
Edson, M. A., Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Edson, M. M., Manhattan Telephone Company, Manhattan, Ill.
Farr, C. W., Farr Telephone and Construction Supply Company, Chicago.
Farwell, H. S., Country Home Telephone Company, Chicago.
Fisk, H. M., Chicago Telephone Supply Company, Chicago, Ill.
Fletcher, J. A., Modesto Telephone Company, Modesto, Ill.
Foley, D. T., Western Telephone Construction Company, Winthrop Harbor, Ill.
Fowler, John H., Chicago.
Gantz, M. E., Wenona Telephone Exchange, Wenona, Ill.
Geiserowich, J., Alden Electric Company, Chicago.
Gay, J. W., Mattoon Telephone Company, Mattoon, Ill.
Godfrey, A. C., Northern Illinois Telephone Company, Ottawa, Ill.
Gray, W. H., Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Greer, Frederic, Harvard Electric Company, Chicago.
Harding, E. R., Holtzer-Cabot Electric Company, Chicago.
Harvey, N. G., Illinois Electric Company, Chicago.
Haubrich, A. W., Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Healy, F. E., Illinois Electric Company, Chicago.
Heatherington, H. J., Western Telephone Construction Company, Chicago.
Hedman, C. M., Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Hendricks, A. B., St. Mary, Ill.
Hendrickson, A., Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Hertz, P. J., Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Hibbard, C. L., Varley Duplex Magnet Company, Chicago.
Hockman, B. F., Sumner, Ill.
Holcomb, W. H., The Holcomb-Lobb Company, Chicago.
Holms, C. W., Stromberg-Carlson Telephone Manufacturing Company.
Horn, C. L., Dallas City Exchange, Dallas City, Ill.
Hubacher, J. C., Monarch Telephone Manufacturing Company, Chicago.
Hurst, E. W., Farr Telephone and Construction Supply Company, Chicago.
Hyneman, L. F., Home Telephone Company, Lexington, Ill.
Ihmsen, J. G., American Electric Telephone Company, Chicago.
Jacks, John, Adrian, Ill.
Johnson, F. E., Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Johnson, G. Hallett, International Specialty Company, Chicago.
Johnson, P. L., Keller County Mutual Telephone Company, Bishophill, Ill.
Johnston, J. W., Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Jones, E. M., Manhattan Electrical Supply Company, Chicago.
Jones, Frank G., American Electric Fuse Company, Chicago.
Jones, S. A., Jones & Winter, Chicago.
Jones, W. H., Jones & Winter, Chicago.
Joslyn, J. C., De Kalb County Telephone Company, De Kalb, Ill.
Joy, R. P., R. P. Joy Telephone Company, Chapin, Ill.
Kammeyer, C. E., American Electric Telephone Company, Chicago.
Kaufman, E. E., Carney Brothers Company, Chicago.
Keck, W. M., Princeville Telephone Company, Princeville, Ill.
Keelyn, J. E., Keelyn Telephone Manufacturing Company, Chicago.
Keith, Carl., Illinois Electric Company, Chicago.
Kellogg, L. D., Kellogg Switchboard and Supply Company, Chicago.
Kellogg, Milo G., Kellogg Switchboard and Supply Company, Chicago.
Kendrick, R. G., Central Electric Company, Chicago.
Kenny, J. A., American Electric Fuse Company, Chicago.
Kirk, Jas. L., Sullivan Telephone Exchange, Sullivan, Ill.
Kirkpatrick, E. F., McRoy Clay Works, Chicago.
Klein, Mathias, Mathias Klein & Son, Chicago.
Klein, J. M., Mathias Klein & Son, Chicago.
Knickerbocker, C. E., Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Krahmer, Paul M., Continental Telephone Construction Company, Chicago.
Kusel, H. J., Eureka Electric Company, Chicago.
Kusel, I. J., Eureka Electric Company, Chicago.
Leavitt, R. H., Capron, Ill.
Lempke, F. D., Central Electric Company, Chicago.
Lepreau, F. J., Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Libby, A. D. T., Kellogg Switchboard and Supply Company, Chicago.
Lidberg, T., Swedish American Telephone Company, Chicago.
Lindh, Frank, Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Leppert, John C., Continental Telephone Construction Company, Chicago.
Lobb, Harry W., Holcomb-Lobb Company, Chicago.
Low, Willard P., Electric Appliance Company, Chicago.
Lundquist, F. A., Globe Automatic Telephone Company, Chicago.
Lumpkin, I. A., Mattoon Telephone Company, Mattoon, Ill.

Lynch, I. Y., Chicago Telephone Supply Company, Chicago.
Macklin, C. H,. Swedish American Telephone Company, Chicago.
Macomber, F. B., Independent Telephone Supply Company, Chicago.
Mankowitz, Samuel, Monarch Electric & Wire Company, Chicago.
Manson, R. H., Kellogg Switchboard and Supply Company, Chicago.
Martin, F. L., Kellogg Switchboard and Supply Company, Chicago.
McCormick, W. E., International Telephone Manufacturing Company, Chicago.
McKinlock, Geo. A., Central Electric Company, Chicago.
McKinnie, F. R., Moon Manufacturing Company, Chicago.
McQuiston, W. T., Monmouth Telephone Exchange, Monmouth, Ill.
Messer, Chas., Dearborn Electric Company, Chicago.
Middleton, F. L., Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Miller, K. B., Kellogg Switchboard and Supply Company, Chicago.
Meissner, W. O., Acme Electric Company, Chicago.
Moon, S. W., Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Mudge, F. A., Cedar Point Telephone Company, Peru, Ill.
Mudge, F. E., Cedar Point Telephone Company, La Salle, Ill.
Mueller, William, The William Mueller Company, Chicago.
Mueller, Jr. William, The William Mueller Company, Chicago.
Myers, William, Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Naugle, A. T., E. E. Naugle Tie Company, Chicago.
Naugle, E. E., E. E. Naugle Tie Company, Chicago.
Nolen, J. G., Columbia Telephone Manufacturing Company, Chicago.
Norling, J. E., Globe Automatic Telephone Company, Chicago.
Nyberg, T. W., Galva Telephone Company, Galva, Ill.
Orr, A. N., Farmers' and Merchants' Union Telephone Company, Griggsville, Ill.
Osthoff, O. E., Electric Storage Battery Company, Chicago.
Overshiner, Arthur, Swedish American Telephone Company, Chicago.
Overshiner, E. B., Swedish American Telephone Company, Chicago.
Parish, J. H., Western Telephone Construction Company, Chicago.
Passow, William, Continental Telephone Construction Company, Chicago.
Patten, F. B., Northern Illinois Telephone Company, Sandwich, Ill.
Pearl, Allen S., Central Electric Company, Chicago.
Peterson, John, Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Pierce, F. M., Manhattan Electrical Supply Company, Chicago.
Pitcher, L. A., Lee County Telephone Company, Dixon, Ill.
Pitcher, L. D., Jo Davies County Telephone System, Dixon, Ill.
Platt, Chas. P., Kellogg Switchboard and Supply Company, Chicago.
Plew, Jas. E., National Measured Service Company, Chicago.
Pringle, Frederick W., La Salle Electric Company, Chicago.
Procunier, H. E., Moon Manufacturing Company, Chicago.
Procunier, William., Moon Manufacturing Company, Chicago.
Raber, F. W., Raber & Watson, Chicago.
Ramsey, W. H., Auburn Telephone Exchange, Auburn, Ill.
Rankin, R. W., Farmers Telephone Company of Henderson County, Ill.
Reeves, H. M., Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Reiley, J. F., Seaton Telephone Exchange, Seaton, Ill.
Rhea, L. J., La Harpe Telephone Exchange, La Harpe, Ill.
Rodormer, Geo., American Electric Fuse Company, Chicago.
Roth, G. A., Roth Brothers & Company, Chicago.
Rousseau, A. J., Kellogg Switchboard and Supply Company, Chicago.
Rugh, H. A., Northern Illinois Telephone Company, Sandwich, Ill.
Rumszel, John, Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Salisbury, E. E., National Autophone Company, Chicago.
Schlosser, G. P., Gibson Telephone Company, Gibson City, Ill.
Shafer, Henry, International Telephone Manufacturing Company, Chicago.
Shaw, William, Eureka Electric Company, Chicago.
Sipperly, Louis, Western Telephone Construction Company, Chicago.
Smith, O. W., Chicago.
Sonne, W. W., Western Telephone Construction Company, Chicago.
Stacey, Thomas I., Electric Appliance Company, Chicago.
Stafford, C. B., Acme Electric Company, Chicago.
Stamper, F. H., Stamper Union Telephone Company, Benton, Ill.
Steigberg, A. O., Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Stein, Arthur, Eureka Electric Company, Chicago.
Stevens, C. G., Chicago.
Stiger, C. W., Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Stitch, Geo. F., Acme Electric Company, Chicago.
Stites, R. N., Municipal Signal Company, Chicago.
Stromberg, Alfred, Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Strong, Henry C., Chicago.
Swearngen, Rob't, Seaton Telephone Exchange, Seaton, Ill.
Tanner, S. S., Mutual Telephone Company, Minier, Ill.
Taylor, Frank B., National Autophone Company, Chicago.
Taylor, W. A., Western Telephone Construction Company, Chicago.
Thomas, W. P., Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Townsend, W. W., Kellogg Switchboard and Supply Company, Chicago.
Troy, T. C., Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Valentine, E. H., The Valentine-Clark Company, Chicago.
Wagner, John, Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Walsh, E. J., Acme Electric Company, Chicago.
Watson, A. D., Raber & Watson, Chicago.
Welsh, Thomas, Stromberg-Carlson Telephone Manufacturing Company, Chicago.
Wheeler, F. H., Wheeler Electric Construction Company, Chicago.
Whyte, G. S., Macomber-Whyte Wire Company, Chicago.
Wiley, J. R., Standard Underground Cable Company, Chicago.
Winter, G. D., Jones & Winter, Chicago.
Wood, A. T., Saybrook Telephone Exchange, Saybrook, Ill.
Worcester, C. H., Chicago.
Yaxley, E. E., Monarch Telephone Manufacturing Company, Chicago.
Zinnell, Frank, Savanna Telephone Company, Savanna, Ill.

An Indianapolis woman called up her grocer by telephone the other morning and, after she had sufficiently scolded the man who responded, said:

"And, what's more, the next order you get from me will be the last I'll ever give you."

"It probably will, you are talking to an undertaker."

DECISIONS AFFECTING TELEPHONY.

PREPARED FOR TELEPHONY BY ANDREWS & MURDOCH, BERRIEN SPRINGS, MICHIGAN.

OCCUPATION OF STREETS OF BOROUGHS.

Companies engaged in the dissemination of electrical power in New Jersey are not required to obtain the consent of the borough authorities before erecting poles on and stringing their wires across the streets of the boroughs. To this effect the Court of Chancery recently held in the case of Point Pleasant Electric Light and Power Company vs. Borough of Bay Head, 49 At., Rep. 1108. The case grew out of the action of the borough authorities in cutting the wires of the light company which had been strung across the streets, the company not having obtained a franchise from the borough. In its opinion the court held that the requirement that electric light companies obtain permission from the municipal authorities before occupying streets with poles and wires applied only to towns and cities and did not apply to boroughs, and that any regulation of such use as boroughs are authorized to prescribe must be regularly enacted ordinances.

DUTY TO WARN WORKMEN AND PROVIDE SAFE PLACE TO WORK IN.

Fifteen thousand dollars is the amount that the Los Angeles Electric Company has been called on to pay for negligence in failing to warn a lineman that it is dangerous to handle electric wires. Thomas F. Tedford, who recovered the judgment, was at work on one of the poles belonging to the company engaged in scraping a wire when he received an electric shock which caused him to fall to the ground, and he was thereby badly injured. Tedford was working under the directions of one Burge, who was a foreman in charge of a gang of men of which plaintiff was one. The company relied upon the "fellowservant" doctrine, in part, as a defense, claiming it was the duty of Burge, Tedford's fellow-servant, to have informed the latter of the dangerous character of the work. In discussing this phase of the case the Supreme Court of California (66 Pac., Rep. 76) said, "there are certain duties which an employer owes personally to his employes, and he cannot avoid responsibility for injury to one servant, caused by the failure to perform such duties by delegating their performance to another servant. In such case the fellow-servant to whom the performance of such duties is assigned becomes, with respect to that particular duty, the special representative of the employer—sometimes called a vice-principal. In such case the negligence of the servant is the negligence of the principal, for which the latter must answer. Some of such duties, well established in the law, are to furnish proper machinery, and appliances and keep them in repair, to exercise care in selecting competent servants, to take reasonable care for the safety of the employes, etc. It is also one of these duties to give careful instructions, directions and warnings to a youthful or inexperienced servant of unusual and hidden dangers, of which the employer is aware, and of which the servant, to the employer's knowledge, is ignorant, and in such case the employer cannot escape the responsibility by delegating this duty to a fellow-servant of the person injured. The Supreme Court found that there was sufficient evidence on which to go to the jury upon the foregoing theory and sustained the verdict rendered.

Another case in which similar questions were involved was that of Tracy vs. Western Union Telegraph Company, 110 Fed., Rep. 103. Tracy was a lineman engaged with other men, under the direction of a foreman, in removing wires from the cross-arms of telegraph poles. While so engaged a pole on which he was at work broke and let him fall, causing him severe injuries. The pole broke just beneath the surface of the ground on account of its rotten condition, which condition would have been disclosed if any examination had been made. The evidence was conflicting as to whether it was the duty of the lineman or the foreman to inspect the poles, but on submission of the case to the jury the latter found that the inspection should have been made by the foreman. Judge Acheson of the United States Circuit Court, in reviewing the case, quoted the opinion of the Supreme Court of the United States in the case of Hough vs. Railroad Company, 100 U. S., 213, to the effect that it is the personal duty of the master to provide his servant with a reasonably safe place to work in, and that the master cannot relieve himself of the responsibility growing out of this positive duty by delegating its performance to another.

WELL-KNOWN HEADS OF WELL-KNOWN HOUSES

A BIOGRAPHICAL SKETCH OF GEORGE A. BRIGGS.

In the Independent telephone manufacturing field there are few men who stand higher in the estimation of their business associates than the subject of this sketch. While

GEORGE A. BRIGGS.

comparatively a young man, Mr. Briggs is president of the Chicago Telephone Supply Company, and is interested in a number of other business enterprises. He was born at Mt. Pleasant, Ia., July 29, 1869. He attended the Iowa Wesleyan University, Mt. Pleasant, Ia., and the Nebraska State University, Lincoln, Neb. From 1890 to 1895 he devoted himself to the banking business and during this period was assistant cashier of the Bank of Superior and cashier of the Valley Bank, Alma, Neb. Leaving Nebraska in 1895, he came to Chicago and founded the Chicago Telephone Supply Company, and has been at its head ever since. From a small beginning the company has steadily advanced, until to-day it is a very material factor in the Independent telephone manufacturing field. The success of this company is due largely to Mr. Briggs' untiring efforts and careful management. He is an example of the successful young man in business and the position he has gained for himself and company speaks well for his sagacity and shrewdness. His success is due to his affability, keenness of judgment and business honor.

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THE STORY OF ILLINOIS.

In this issue is presented the telephone story of Illinois, written by Mr. J. E. Keelyn, one of the pioneers in the Independent telephone manufacturing field. The struggles and vicissitudes of the early workers in the cause are depicted and much interesting data is given not previously published. The story is illustrated with halftone portraits of over two hundred prominent telephonists; men who have done much for the movement and who have demonstrated to the monopoly (?) that the "opposition" is something to be reckoned with. More than any other state Illinois shows the strength of this movement for better and more reasonable telephone service. It was the cradle of Independent telephony and is to-day its bulwark. More than seventy-five per cent of the telephones manufactured in the world are produced in Illinois. The first telephones were produced here, and all the important patent suits brought by the Bell interests have been defended, and successfully, by Illinois manufacturers. In the number of Independent exchanges in operation the state leads by a small margin, Ohio being second. It is unquestionably the banner state and will remain so, as there is small chance of its losing its supremacy. In the December TELEPHONY we will tell the story of New York.

TELEPHONY FOR 1902.

In the December number we will announce the policy and features of TELEPHONY for 1902. It is the publishers' intention to strengthen and improve the journal in many ways; to broaden its sphere and make it of interest and value to everyone engaged in telephone work. To this end we invite criticism and suggestions and will take in the kindliest spirit any comment or advice which will assist us in improving the publication.

BELL SERVICE IN CHICAGO.

A great deal of fault is being found with the service furnished subscribers by the Chicago Telephone Company. It is claimed the service is uniformly bad, though the company is charging, in many instances, $175 per year, which should certainly insure good service. The Illinois Manufacturers' Association has brought suit against the company to restrain it from charging more than $125 per year, which is the maximum amount allowed to be charged under the company's franchise. A decision in the case is pending. In the meantime the company charges subscribers the highest possible price for what is unquestionably very poor service. It is not believed any relief will be found until an Independent system shall be established in Chicago.

THE TELEPHONE IN MODERN BUSINESS.

The telephone, especially in its long distance form, is bringing about a good many changes in business methods. The whole telephone system is a development of the last twenty years. Two decades ago the old-fashioned machine was just being introduced into the large cities of the country and it was not until fourteen or fifteen years ago that it had become thoroughly established even in the business centers.

What a difference there is between the original telephone and the present long distance instrument; the one with its slow service, its feeble sound, its indistinct articulation; and the other with its almost instantaneous promptness, its strong tone and its clear articulation. With the present instrument one can talk more satisfactorily between Chicago and New York than fifteen years ago with a subscriber in the next block on the same circuit.

The special development of recent times, however, has been in its use as a long distance instrument, thereby taking the place of telegrams, letters or personal visits. Many a business deal of importance is put through from beginning to end by the use of the long distance telephone. It is most useful between principals in clearing up doubtful or disputed questions and bringing about that perfect understanding which it is often too difficult to arrive at by letter and usually depends for its consummation upon a personal interview.

Another important use of the long distance telephone is the way in which it brings into close touch business men and their agents. It enables traveling salesmen to be in daily communication with their principals in a way much more satisfactory than any amount of letter writing and, considering the saving of time, at no greater expense. Carrying the idea still further, in many cases a traveling sales-

man with a sharply defined territory and established trade can visit many of his customers by telephone without the time and expense of a personal call. The personal acquaintance must be maintained and personal visits are necessary, but they can be made less frequently and even more constant connection can be maintained than by traveling. For example, a storekeeper in a country town need not wait for a salesman to call upon him or need not hold his order for his favorite salesman, but can call him up by telephone and find out in a moment whether the particular stock he wants can be had and at what price.

It is a fact that the telephone has had a marked influence on the passenger business of the railroad companies. Take nearby towns like Chicago and Milwaukee, for example, or New York and Philadelphia. Doubtless there are scores of people every day in such towns, and perhaps hundreds, who must have a personal conversation with some person in the neighboring city. If it were not for the telephone one of the parties would have to visit the other. Now a five minutes' talk over the telephone answers every purpose, saving time and expense of the trip, but depriving the railroad of just so much revenue. Fewer salesmen also are needed, and altogether the telephone in its perfected form and covering so wide a territory as it does, simplifies business methods and promotes economy.

THE GRAND RAPIDS IDEA.

The citizens of Grand Rapids, Wis., seem to have solved several important municipal problems. Under the plan in vogue there, the advantages of municipal ownership are obtained, without any of the disadvantages.

The Grand Rapids idea started with the telephone service. A few years ago, that city had the Wisconsin Bell Telephone Company, which furnished very poor service at very high rates. A company composed of local people was formed, each stockholder taking as many shares of stock, at $50 per share, as he used telephones. Rates were fixed by ordinance at $2.25 per month for business telephones and $1.25 for residences, and anyone who wished could secure the service, whether stockholders or not. The stockholders, however, received a dividend of 1 per cent per month on their stock, making their 'phones cost them $1.75 and 75 cents respectively. Any stockholder who gives up his telephone must also give up his stock interest in the company. The company has been remarkably successful, and in a few months the Bell company gave up the struggle against it.

The advantages claimed of this new style of corporation are briefly summed up as follows: It is practically municipal ownership, only non-taxpayers have no voice in the management of the plant; it furnishes service at lowest possible cost, as the corporation cannot create a sinking fund without permission of the council, and there is no incentive to charge exorbitant rates.

NEW BELGIAN BRITISH TELEPHONE LINE.

The following has been received at Washington, D. C., from Consul Roosevelt, dated Brussels, October 10: "In a few days a new submarine telephonic cable will be laid, connecting Brussels with London. The point of immersion on this side will be near La Panne, and on the English coast the line will emerge at Ramsgate. The circuit will be so disposed as to serve large commercial cities of Belgium and England, such as Antwerp, Liege, Birmingham, Manchester and Liverpool."

NEW INDEPENDENT DESIGN IN MICHIGAN.

A new telephone sign has been adopted by the independent telephone interests of Michigan, and in the future a uniform insignia will be used by all the Independent telephone companies in that state. The new sign was determined upon at a meeting of representatives of the Independents at Saginaw, which was attended by Manager C. E. Tarte and Secretary E. B. Fisher of the Citizen's Telephone Company of Grand Rapids. There were also representatives of the Valley Telephone Company, having headquarters at Saginaw, and controlling the Independent telephone field in the Saginaw Valley of the Union Telephone Company, with headquarters at Alma and operating in the central part of the state, and of the People's Telephone Company, now building exchanges in Detroit and Jackson.

The new sign, which is the design of C. E. Tarte of Grand Rapids, bears a solid blue shield on a white background. The words "Independent Telephone" are above and below the shield, which bears the words: "Local and Long Distance" in white letters. This insignia will go into use at once.

DEATH OF Z. S. HOLBROOK.

It is with regret that TELEPHONY chronicles the death of Z. S. Holbrook, which occurred at Boston, on October 23.

Mr. Holbrook died after a surgical operation. He was known in Boston principally by reason of his connection with the Independent telephone movement. He recently resigned as president of the Massachusetts Telephone and Telegraph Company, to accept the presidency of the American and Moore Electrolytic companies.

Mr. Holbrook had been a Methodist minister, an official of the United States treasury, active in politics, connected with the Lamson Store Service Company in Chicago, and in Boston had been identified with some of the projects of Josiah Quincy. He was 55 years old.

THE TELEPHONE WIRE.

(From "The Rhymes of Ironquill.")

West from the boiling Missouri, turbid with pulverized granite,
West o'er the orchards and farms asleep in the hammock of autumn,
West o'er the upland uprising, russet with wheatland close-shaven,
West o'er the yellowish shales and scattering prairie-dog cities.

Why in the moonlight, O wire, so sadly, so constantly moaning?
Brightly in Argentine's smelters murmurous crucibles bubble;
Proudly uprears in Topeka the bronze of the dome and the tholus;
Gaily Pueblo appears with rolling-mills crowning the mesa.

"Come, O my brother, come back; our mother is grieving and dying."
"Come, O my lover, come back, and I, if you come, will forgive you."
"Come, O my daughter, come back; I wait, and must live till I see you."
"Come, O my husband, come back; the past, if you come, is forgotten."

Moan on, O wire; you are bearing burdens of hearts that are breaking;
Kindly the zephyrs of Kansas absorb your aeolian sorrow.
Listening, listening long, the prairie dog goes to his burrow,
Telling the owl and the snake the woes of the gods and their sadness.

—E. F. WARE.

An idea of the extent of the Chinese population of San Francisco can be gathered from the fact that Chinese girls are to be employed in the San Francisco telephone exchange, because so many Chinese inhabitants use the telephone that it is necessary to have operators who speak that language.

A MODEL TELEPHONE PLANT.

In the past practically all of the telephone exchanges of up to one thousand subscribers, and even more, having been built with but very little, if any, underground, a description of the exchange recently opened by the Streator Independent Telephone Company at Streator, Ill., will be of interest to builders of new plants. This city has a population of about 12,000 inhabitants and is a good growing coal center. While the Bell company had but little more than 200 subscribers within the city limits, the new company built its plant with

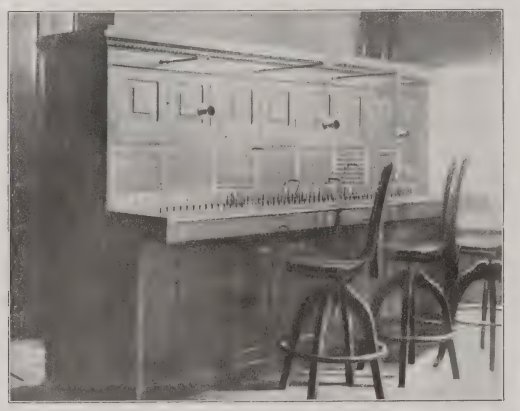


FIG. 1—STREATOR (ILL.) INDEPENDENT EXCHANGE.

an ultimate capacity for 1,200 subscribers. It opened its exchange July 1 last with 300 lines, and has steadily increased its list, and has at this time nearly 500 subscribers.

In building this plant the company spared no necessary expense in its construction, and a system was planned that would be second to none in the field. The exchange is strictly metallic throughout with hard drawn copper wire for the open aerial work. In the entire business part of the city

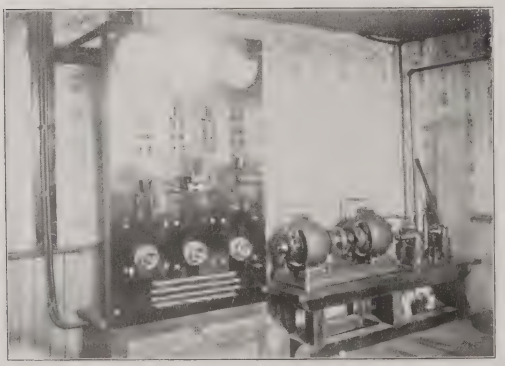


FIG. 2—STREATOR (ILL.) INDEPENDENT EXCHANGE.

and in a large part of the best residence districts all lines are placed underground, excepting the distributing wires. The underground consists of about four miles of duct in nearly two miles of conduit. There are more than 300 miles of wire conductors in the underground cables, which is more than three-fifths of the line wire in the entire exchange. The cables are of the best quality double-wrapped, dry core, paper insulation, lead sheath, Standard make. They are run from the conduits through 3-inch iron pipe, three-quarter bends to the distributing pole and are lead through pot heads into fused terminals placed in cable boxes, as shown in Fig. 3. The cable boxes are a weatherproof box with double door and painted white with two coats of waterproof paint. Each main distributing pole is provided with a strongly built pipe railed platform. No platforms are placed on poles where small ten-pair terminals and boxes are provided for distributing a few lines within a block from aerial cables. In the underground district all of the lines are run from the distributing poles to the subscriber's station by weatherproof, insulated twisted wire. The inside wire is No. 19, rubber covered, braided and twisted. All heavy aerial leads are run with cable.

Figure 4 shows the lead on Vermilion street, beginning at the underground section and running west with a 100-pair cable.

Figure 5 shows one of the main open-wire branch leads.

The exchange covers an area requiring nearly 1,000 poles within the city limits. All poles are provided with galvanized pole steps and supplied with one or more ten-

FIG. 3—STREATOR (ILL.) INDEPENDENT EXCHANGE.

pin cross arms, properly braced with galvanized cross arm braces.

Figure 6 shows the lead on Main street, extending from the underground district, crossing the Santa Fe, C., B. & Q., C. & A. and the I. I. & I. railroad tracks, running over the telegraph lines and above the electric light wires. The line is constructed with 60-foot poles. A large portion of the lines in the exchange are constructed in alleys, as shown in Figure 7.

The exchange is equipped with Stromberg-Carlson central energy system, with a lamp line signal trunking switchboard. Figure 1 shows the switchboard, which is fully equipped for 560 lines, having a capacity for 1,200 subscribers. It is built with 140 lines to the position. The power plant, shown in Figure 2, is of sufficient capacity for operating the exchange, when completed, to its full capacity. The charging machines and ringing generators are of the Roth type. The battery plant is of two sets, 20 cells each, of chloride accumulator. The batteries are placed in a separate room directly back of the power switchboard. The distributing board is placed in an adjoining room to the power room, in which the cables enter from the conduits and ter-

minate through pot heads onto the lightning arrester board. The exchange is located in the Opera block, with the switchboard and manager's office on the second floor, and the power plant, battery room and terminal room in the basement. With the large amount of underground work in this plant, having nearly twice the amount of underground wire than there is in aerial line construction, as well as the class

FIG. 4—STREATOR (ILL.) INDEPENDENT EXCHANGE.

of work with which the entire exchange is built throughout, makes this one of the best and most durably constructed plants in the telephone field and a model in Independent exchange work. The exchange was laid out and built by the Continental Telephone Construction Company, Chicago.

While there was much more than the usual efforts put forth by the Bell company to keep out competition, and every

FIG. 5—STREATOR (ILL.) INDEPENDENT EXCHANGE.

possible method used to delay the construction, the plant was put in operation within four months' time.

While this exchange was the first plant built by the Continental Telephone Construction Company, it shows that nothing but the highest grade material and the best class of workmanship was used. The company contemplates general electrical contract work, including electric light plants, street railway work, as well as telephone exchange construction.

Its president, Mr. William Passow, is one of Chicago's prominent business men, being president of the Passow Billiard Tables & Saloon Fixture Company, and is widely known in his line throughout the central and western states.

FIG. 6—STREATOR (ILL.) INDEPENDENT EXCHANGE.

Mr. Paul M. Krahmer, who is well known in the electrical field as a practical electrical engineer of high standing, is vice-president and general manager.

Its treasurer, Mr. John C. Leppert of the Leppert jewelry firm of Chicago, is well known in his line for his con-

FIG. 7—STREATOR (ILL.) INDEPENDENT EXCHANGE.

servatism in all business matters and has a high standing in financial circles.

Mr. F. B. Patten, well known in the Independent telephone field, is secretary.

The company has recently opened its offices in the Marquette building, Chicago.

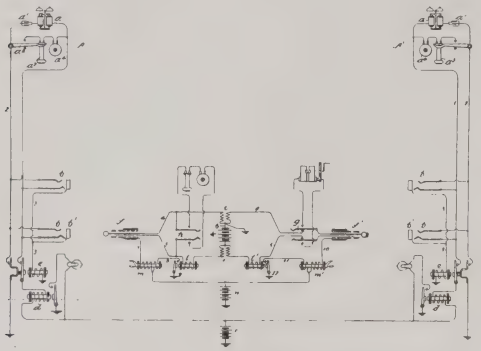
DIGEST OF TELEPHONE AND KINDRED PATENTS.

CONDUCTED BY EDWARD E. CLEMENT.

AUGUST 20.

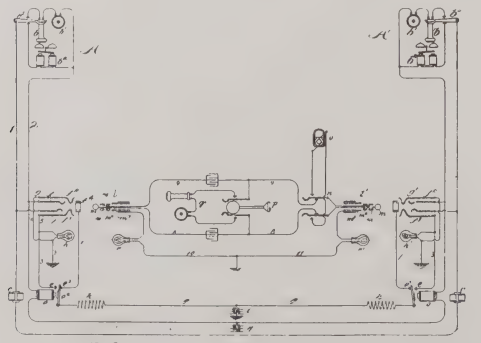
11,928.—C. E. Scribner. Supervisory Signal for Telephone Switchboards.

This is a reissue of a patent granted in June of this year. The gist of the invention lies in employing a supervisory signal m having differential windings. The system shown in the diagram is the regular common battery relay system of the Bell company. In such systems, as is well known, relays 1 1′ are included in the two sides of



11,929—SUPERVISORY SIGNAL FOR TELEPHONE SWITCHBOARDS.

the cord circuit leading from the bridged battery to the respective plugs. Each relay responds to the movements of the hook a^2 at one of the subscriber's station, the relay in turn controlling the supervisory signal. Ordinarily the supervisory lamp is kept shunted, but it is asserted that this shunting is undesirable by reason of the resulting changes in the potential impressed upon the test circuits including the test rigs b′. In the present case, therefore, shunting is avoided, each supervisory signal being provided with differential windings, one winding being normally included in the circuit 7 leading from the test battery n to the plug sleeve and the test rings b′ when the plug f is inserted in a jack. The other winding is included in a local circuit 8 opened and closed by the relay l. The re-



680,879—TELEPHONE EXCHANGE APPARATUS.

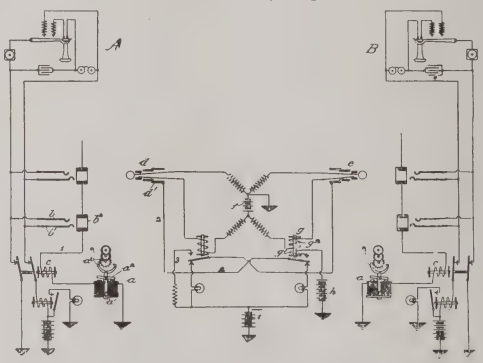
sistance in the circuit 7 is therefore constant and the supervisory signal is rendered active or neutral by the differential winding in response to the action of the relay l.

680,879.—F. R. McBerty. Telephone Exchange Apparatus.

This invention provides means to be used in connection with common battery switchboards whereby the supervisory relay hitherto used in the cord circuit may be dispensed with, the line relays doing all the work of regulating the operation of both line and supervisory signals. In the diagram the line 1-2 is connected through line relay e and the balancing coil c to the common battery d. When the subscriber calls current flows in this circuit to energize the line relay, which thereupon pulls up its armature e^2, and closes the local circuit 3-4, including the line signal lamp h and the battery i. A normally open shunt around the line lamp h has its two members 5-6 terminating in springs f^3 f^4. When a plug l is inserted in the jack the plug ring m^2 bridges across these springs and completes the shunt about the lamp. The insertion of the plug has also brought the sleeve m^3 into connection with the jack sleeve f4, thus completing the circuit of the supervisory lamp r as far as the point e3 of the line relay; but as the latter holds up its armature so long as current is flowing in the line, the supervisory lamp remains dark. Upon the completion of the conversation, however, the cessation of current flow in the line permits the armature of the line relay to fall back and close the circuit of the supervisory lamp r through resistance k, wire 4, and battery i, this lamp then lighting for disconnection in the usual way.

680,880.—F. R. McBerty. Connection Register for Telephone Exchanges.

The invention in this case consists of a call register attached to a particular line at the central office and registering automatically upon the completion of each connection and the answer of another subscriber called over that line. A polarized magnet a is employed, connected in the circuit i from the cut-off relay c to ground. This circuit is connected to the test rings, as usual, and when a plug is inserted current from battery i passes to the cut-off



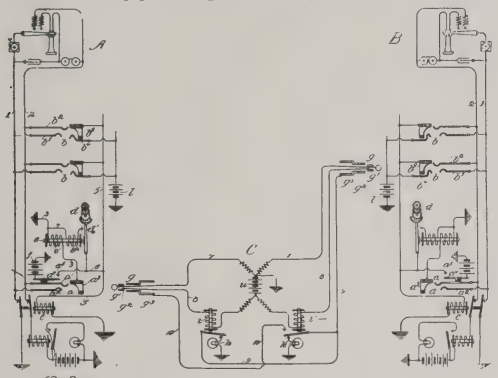
680,880—CONNECTION REGISTER FOR TELEPHONE EXCHANGES.

relay and register magnet a, causing the latter to throw its armature to one side, thus preparing for a final operation and registering. Inasmuch as the register of the calling line must respond to changes in the called line only, it is necessary to have the final step or action of the registering magnet under the control of a relay connected to the called line. This is accomplished by having the usual supervisory relays g control crossed circuits, each including its own lamp, and the other one's plug sleeve. In addition a registering battery h is provided, of opposite polarity from the test battery i. Suppose A calls. Plug d is inserted to answer and current immediately flows from battery i through circuit 2 to plug sleeve d′, to test thimble b^3, cut-off relay c, register magnet a, and ground. The relay g in that side of the cord leading to the called subscriber controls this circuit, and when that subscriber answers, this relay g receives current, so that its armature is attracted and cuts in the battery h, at the same time disconnecting battery i. The armature is held up by a short winding included in the circuit of battery h, when once attracted,

and henceforth is not under control of the subscriber. This reversed current from battery h acts upon the magnet a to throw back its armature and complete the register.

680,890.—C. E. Scribner. Connection Counter for Telephone Exchanges.

This is an automatic register which records only those calls which are answered. A register train with dials d is provided, adapted to be actuated by the magnet e. This magnet has two windings e' and e², one of which is included in the circuit 3-3 leading from the jack sleeve a', so that



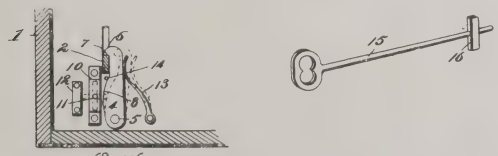
680,890—CONNECTION COUNTER FOR TELEPHONE EXCHANGES.

when the answering plug is inserted the winding e' is connected through the cord conductor 10 to the up contact of the supervisory relay i'. When the calling plug g is inserted into a multiple jack, as b of the wanted line, the cord conductor 9 is conducted to the battery 1 associated with the springs b⁴ of the jack sleeves, and itself connected to the sleeves when the plug is in a jack. When the called subscriber answers his supervisory relay i' responds to connect the conductors 9 and 10, thereby sending current back through winding e' of the register. The magnet e thereupon attracts its armature and completes the local circuit 4 through point a⁵ in the jack, and spring a⁶ to another local battery f. This circuit being once completed, the armature of the magnet e is held up, without regard to the called line or the supervisories, thereby insuring a single operation of the register.

AUGUST 27.

681,296.—A. L. Brinckle. Telephone Receiver Support Lock.

This is a lock to hold down the switch hook after it has been once depressed, and which can only be released by the use of a key. The latch is shown at 4 in the figure,

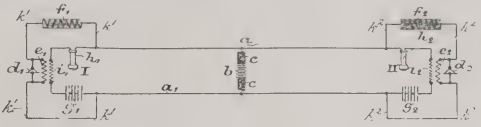


681,296—TELEPHONE RECEIVER SUPPORT LOCK.

having its hook 6 taken over the lever 2 of the switchhook (shown only in section), and pushed against the hook lever by the spring 13. When the receiver is once hung up the latch springs over it and the key 15 must be inserted in a keyhole in the side of the box, as shown at 11, and turned as shown in dotted lines to push back the latch to release the hook. A guard 12 prevents the introduction of a wire from the front to pick the lock, and the latching of the lever prevents the running down of the battery if the receiver should be left off the hook through carelessness, as well as permitting calls to be made only by those who have a key.

681,374.—L. Polinkowsky. Microphone and Telephone Installation.

The gist of the present invention seems to be in the method of connection of the subscriber's talking set in a central battery system. The main battery b, at the central office, is bridged between choke coils and at each sub-station two parallel paths are closed during conversation, viz.,

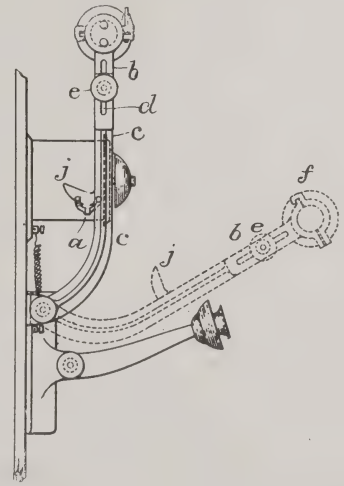


681,374—MICROPHONE AND TELEPHONE INSTALLATION.

one through the receiver and secondary h' and i', and the other through the transmitter d' and the primary e1, the two latter being in parallel with each other. In the receiver or secondary circuit is included a condenser or set of polarization cells, to prevent the passage of constant current; while in the transmitter or primary circuit is included a choking coil f', to prevent the passage of varying currents.

681,408.—E. M. Cox and W. Reed. Adjustable Arm for Supporting Telephone Receivers.

This is a pivoted support for receivers, carrying an adjustable clamping holder at one end, as at b, to hold the receiver, and with its base adapted to be fastened to the



681,408—ADJUSTABLE ARM FOR SUPPORTING TELEPHONE RECEIVERS.

backboard of the instrument, if a wall telephone, or to a clamping attachment for desk sets. The pivoted arm c of the holder has a cam finger j which when the arm is turned up presses down the switchhook, and when the arm is turned down in use releases the same.

681,603.—G. M. Yorke. Mechanical Intercommunication Between Telephone Switchboards.

In the practical development of the larger and more comprehensive schemes of telephone connection, such as elaborate systems of trunking, and especially where local and long distance traffic are handled simultaneously, the exigencies of the service have resulted in the keeping of records, and what might be called "train orders," about which there can be no dispute, and in which the possibility of mistake is reduced to the minimum. In some cases a return to what appeared at first glance to be first principles

in the art has been expedient. In the old days orders were transmitted by shouting between the operators, and after this became a nuisance written cards or slips were used, carried about by messengers. In the very latest development the slips or cards are again employed, being known as "tickets." In the case of toll line traffic, the local or answering operators make out the tickets, with all the information required for the completion of the desired connections, and the tickets are then passed to the toll or connecting operators, who carry out the instructions. The present invention is a simple and ingenious arrangement of apparatus for ac-

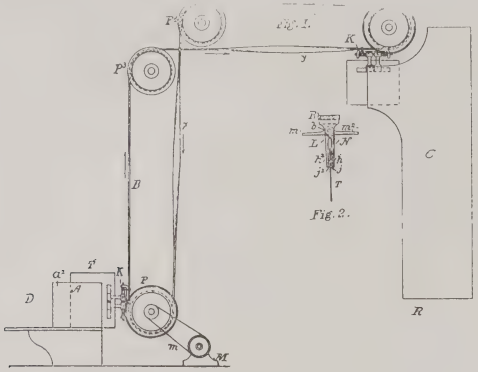


Fig. 1.

681,603.—MECHANICAL INTER-COMMUNICATION BETWEEN TELEPHONE SWITCHBOARDS.

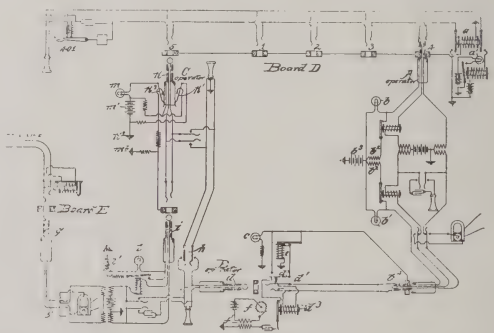
complishing the transfer of the tickets without delay and with certainty of transmission. It contemplates a constantly moving carrier belt B B² running on pulleys P P²P³P⁴, and extending from one switchboard or section at D to another at R. On the belt are carried carriers K, each as shown in Fig. 2, the general scheme being as shown in Fig. 1. Each carrier has a pair of spring pressed fingers L and N, normally held together, and having lateral extensions m′ m². All intermediate pulleys, as P³ P⁴, have low flanges, and the carriers K ride over them without their fingers touching, but on the terminal pulleys P P² there are provided wide flanges, and when the carriers come to them the extensions m′ m² strike on the flanges and force the fingers apart. Now, suppose that the operator at D wishes to send a ticket to the operator at R. She places the ticket in a stand or rack A in the position shown at T. As the belt travels along it brings the carrier K, whose fingers open as they strike the flanges of the pulley P and close again on the ticket, carrying it along in the direction of the arrow. Whenever a pulley is passed to change direction, as at P³, the belt is given a half turn, so as to bring the carrier always on the outside. When the pulley P² is reached the carrier fingers strike the flanges of the pulley and open, letting the ticket fall into the hopper C, whence it passes out into the basket E before the toll operator.

SEPTEMBER 3.

681,724.—J. L. McQuarrie. Telephone Exchange System.

This is a system for trunking between switchboards and enabling the different operators to supervise the connection without interruption. The nature of the invention will be best understood by a statement of the operation. Suppose a subscriber 401, in a common battery, is calling for a toll line connection with line on board E. The operator A answers and puts the subscriber through to B, who, with C, finishes the connection. The answering plug is inserted within a line jack of a calling subscriber 401. The connecting plug is inserted within the spring jack b′ of a trunk line extending between the A operator and the B operator located at a switchboard E. The cord connecting apparatus is connected, as shown, when a subscriber of the multiple switchboard desires connection with a subscriber of the other board. Upon the insertion of the connecting plug in the jack b′ sufficient current is directed from the battery b⁵ through the lamp c to cause the same to glow. The B operator thereupon momentarily places the plug d within the trunk line jack d′, whereby the three springs of the jack are removed from their normal contacts, the spring d² being brought into engagement with its alternate contact to establish a path of lower resistance for the current from battery b⁵ through the relay e than the branch including the lamp c affords, the said relay being thereupon energized to attract its armature, which serves to close another path of low resistance through the relay, whereby upon the withdrawal of the plug d the armature of the relay remains attracted. The circuit from the battery b⁵, including the said relay, affords a path of lower resistance than the circuit including the lamp c, the said lamp thereupon being extinguished. The current through the indicator b⁶ is by the same means increased sufficiently to cause the said lamp to glow. The parts at the jack d′ are indicated in the position they occupy when the plug d has been withdrawn.

Means are shown for producing a vibrating current f in a local circuit, capable of creating a distinctive tone in an operator's telephone, the induction coils f′ and b² being provided for propagating this current to the test thimbles of the various spring jacks connected with the third contacts of the A operator's plugs, including the test thimble at the C operator's section of the multiple board. Thus the A operator, by means of her answering plug, establishes one form of test circuit adapted to produce one test manifestation, while by her connecting plug she is able to apply a different testing current, which serves to produce a second and distinctive manifestation. This current is not of a character suited to the effective organization of the relay e. The calling subscriber 401 desiring connection



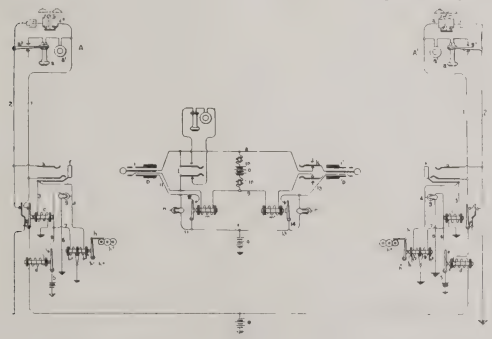
681,724—TELEPHONE EXCHANGE SYSTEM.

with a subscriber of a toll line board, for example, says to the A operator "Long distance." The A operator connects the calling subscriber with the B operator by inserting the connecting plug into the jack b⁴, as hereinbefore described. The operator B inserts plug d and ascertains from the calling subscriber the particular line with which connection is desired. The B operator thereupon proceeds to insert the connecting plug g within the jack of the toll line and operates the ringing key g′. She also operates the listening key h to ascertain from the C operator the particular trunk line between her board and the board of operator C that she may employ, at the same time notifying operator C to make connection with line 401. The B operator then inserts the plug i within the jack of the selected trunk line. The operator C, not knowing whether the line 401 is a calling or a called line, tests, vibrating current from the device f creating a peculiar tone in her telephone in addition to the ordinary test manifestation. This tone

indicates to this operator that subscriber 401 is the calling subscriber, and she thereupon inserts the plug k of the selected trunk line within the jack 401. Upon the insertion of plug k an additional path is afforded for the current from battery b^2 through the lamp b, which may be traced from the contact thimbles of the multiple switchboard through the engaging contact of plug k, plug seat switch contact k′, to ground k^2. This path being of lower resistance than the path including the grounded line relay magnet serves to increase the current through lamp b, which thereupon glows. The A operator, upon noticing the signal given by lamp b, removes the plugs from their engaging jacks, the connection between the subscribers being maintained by the apparatus in charge of operators B and C. The lamps l and m are clearing-out indicators. When the subscribers are through with their conversation, they restore their telephones to their switchhooks, the switch at station 401 serving to open the circuit including the relay governing the indicator or lamp l, the shunt established about said indicator during the established telephonic connection between the subscribers being broken, whereupon the lamp glows. In response to the signal the B operator withdraws plug i from the trunk line jack, whereupon the battery l′, which was opposed to battery m′ during the established connection, is removed, the battery m′ then causing the lamp m to glow, the circuit being traced from ground m^2 through the plug seat switch contacts k^3, lamp m and battery m′ to ground k^3. In response to this signal operator C withdraws the plug k. If a toll line subscriber calls for a multiple switchboard subscriber, the A operator takes no part in establishing the connection. The B operator, who receives this call, notifies the operator C, as before, who tests to find whether the multiple switchboard subscriber is busy, as heretofore, the tone test never being manifested when the toll line subscriber is the calling subscriber.

681,742.—C. E. Scribner. Connection Counter for Telephone Lines.

This is a device to be used in connection with the "relay" board of the Bell company. The idea followed out is that a call should be registered for the line making it only, but whether answered or not. A magnetic register

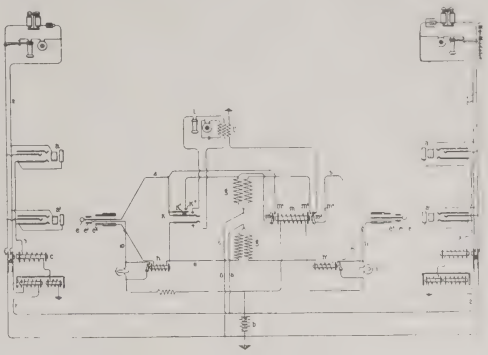


681,742—CONNECTION COUNTER FOR TELEPHONE LINES.

h is provided, its magnet having two windings h^2 and h^3, the first in circuit with the jack sleeve or test thimble, in parallel with the cut-off relay c; and the other in circuit with the line lamp 9 in parallel, so as to receive current when the relay d is energized. It takes both coils h^2 and h^3 to pull up armature h^4 and register. Consequently the line must be calling, and relay d excited, and an answering plug inserted, to bring current on test rings, before the device will register.

681,743.—C. E. Scribner and F. R. McBerty. Switchboard for Telephone Lines.

The relay common battery boards of the Bell company are distinguished by the sharp explosive reports the subscriber frequently hears when innocently endeavoring to obtain a connection. In the present case this is sought to be avoided by the use of a relay m that keeps the cord

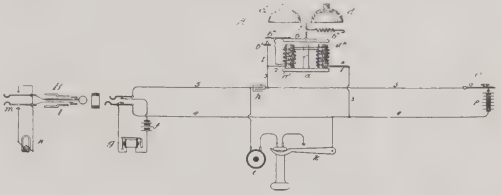


681,743—SWITCHBOARD FOR TELEPHONE LINES.

circuit to battery b open until the calling plug e is inserted, when contacts m^2 m^4 are closed. Before this the tip of calling plug is connected to the set l′ for test, only operator completes cord momentarily only at key k when listening in.

681,744. C. E. Scribner. Telephone Call Bell.

A call bell for extension lines, to respond to either alternating or direct current. The bell has double and reverse windings 1 and 2, 2 being low and permanently connected across the line 4-5, 1 being high and open at contacts b^2 b^3. An alternating current from central office B

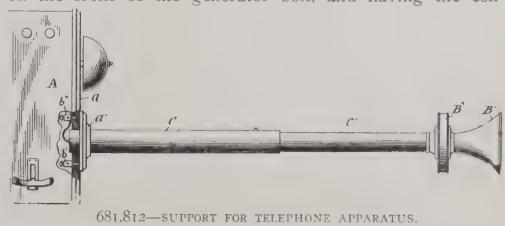


681,744—TELEPHONE CALL BELLS.

throws over the armature, when, winding 1 being completed at b^3, a stronger reversed impulse at once carries it back. A constant current from battery c at the second station on the line produces precisely the same effect. It is of course apparent that to operate properly the natural period of the bell must determine the periodicity of the alternating current used.

681,812.—E. E. Ries. Support for Telephone Apparatus.

A telescoping tubular support for transmitter, mounted on the front of the generator box, and having the con-



681,812—SUPPORT FOR TELEPHONE APPARATUS.

ductors inside it. Transmitter can be pushed and pulled into any desired position.

681,813.—E. E. Ries. Support for Telephone Transmitter.

This is a telescoping arm, made of rods sliding through rubber blocks, and so spaced, with the blocks so perforated, that the whole may be slid together.

681,860.—C. E. Scribner. Service Meter for Telephone Exchanges.

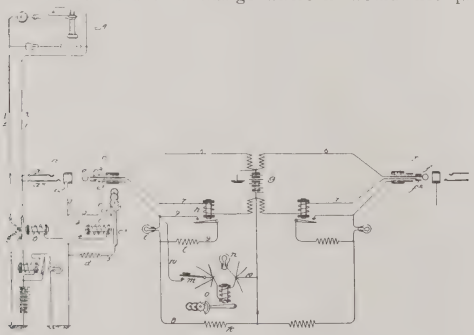
This is a subscriber's register for calls, adapted to be under the control of the operator, who has also a common register of all calls answered and connections made. In the figure, which shows the ordinary central battery "relay" system of the Bell company, b is the cut-off relay and c′ a register magnet connected in parallel from the jack sleeve to ground. Magnet b is of 30 ohms resistance and

681,813—SUPPORT FOR TELEPHONE TRANSMITTERS.

magnet c′ of 500. When plug e is inserted in answer to a call, current from battery g flows as follows: g-k-3-i-(and l-9 in shunt) e^3 (plug sleeve)-a^3-3-b (and c′ in shunt)-and to ground; b is energized alone, the current permitted to pass by resistance k being insufficient for c′. When the connection is complete the operator depresses key m, whereupon a very low resistance shunt through o is closed and both registers c′ and o work. As armature c^2 of magnet c′ is pulled up, it closes a low resistance shunt around c′ sufficiently high to maintain a holding current in magnet c′, but low enough to permit current to pass sufficient to light lamp m, as a signal to the operator that c′ has worked.

681,878.—L. M. Ericsson. Telephone Switch Apparatus.

This is an apparatus for automatically making connections at small branch exchange where it would not pay



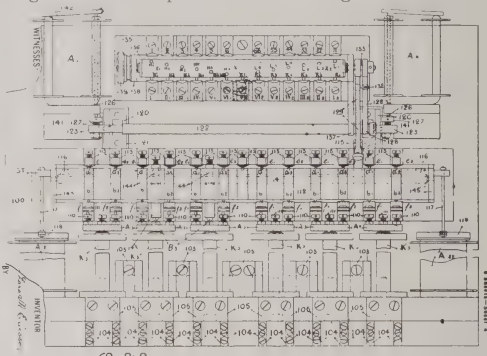
681,860—SERVICE METER FOR TELEPHONE EXCHANGES.

to keep an operator. The conditions to be met are: Subscribers desiring connection among themselves; any subscriber desiring connection through the trunk line to central; central desiring to select a subscriber. The description and drawings are too voluminous to give much detail here, but briefly a contact drum xx^2 is employed for interconnection and selection, using a pair of magnets A′ A″, working the drum by a ratchet and pawl. Drum is spring restored when detent is released by a magnetically operated bar. Subscribers' lines are connected to terminals 110 and 113 along a switch panel 100—two above and two below—over each line magnet k^3. These magnets are shown without windings. A bar ST extends along the panel under the upper line springs, and when any line calls in this bar is elevated and lift all springs, to lock out the other lines. This bar is restored by magnets A^2 A^{22}.

The principal feature of novelty in the line magnet apparatus is the employment of permanent magnets magnetizing the cores k^2, holding the armatures down normally, but releasing them when current passes. The point about this is that when the armatures are in direct contact with the cores the maximum pull is exerted and strong retractile springs can be used, insuring firm contacts.

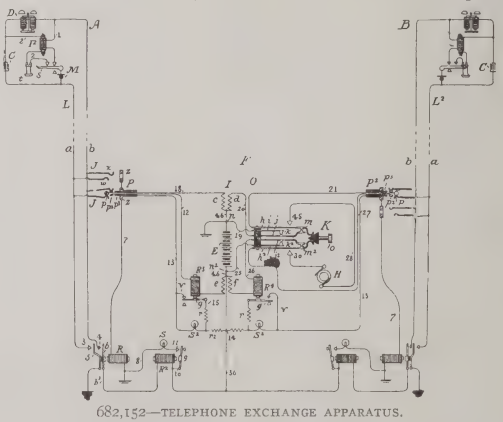
682,152.—A. B. Stetson. Telephone Exchange Apparatus.

The invention in this case is in means to prevent the disagreeable noises produced in a calling subscriber's ear



681,878—TELEPHONE SWITCH APPARATUS.

in a common battery system during connection. The particular noises to which the invention is addressed are those due to static discharge of the called line and its appurtenances after ringing generator has been used. When the ringing key is let go, after ringing, there is usually an explosive sound audible to the calling subscriber, this being produced by the discharge of the charged line through one side of the repeating coil in the cord. The means adopted



682,152—TELEPHONE EXCHANGE APPARATUS.

to prevent this are really very simple, consisting only in establishing a short circuit around the repeating coil windings until the line has discharged each time the ringing key is used.

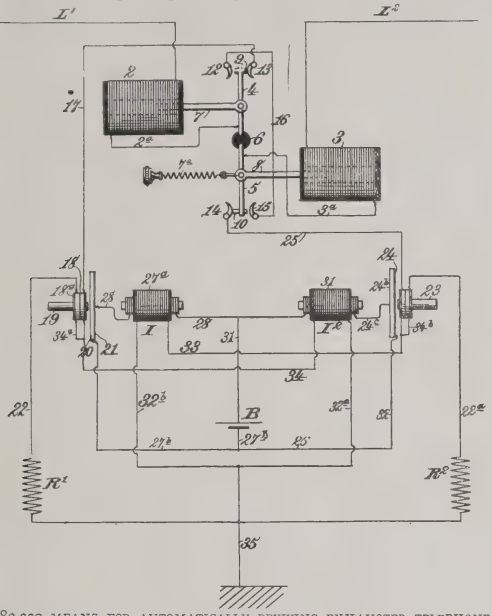
In the figure the regular "relay system" is employed, with common battery E and repeating coil c d e f, the ringing key being shown at K. This key, as is usual, breaks the cord circuit at m and m^2 during the period of ringing. In the present case, however, an extra pair of springs i i^2 are put in the key, adapted to make contact with the springs j j^2, which constitute the terminals of the calling side of the cord during ringing. When the key is released and the plunger o is withdrawn, the springs h h^2 return to make contact with springs j j^2, but in so doing are brought into connection with the others, i i^2. In the further movement

of the springs h h² the springs j j² are carried away from the springs i i², but during the momentary common closure of all the springs together the line a b has been discharged through a short circuit around the windings d and f of the repeating coil established by wires 19 and 25.

SEPTEMBER 10.

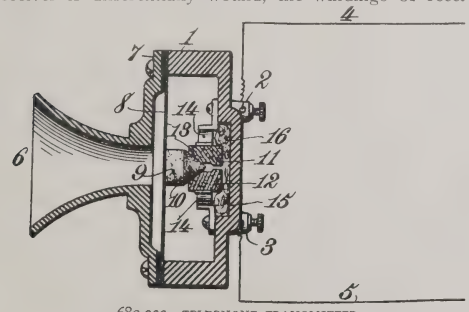
682,332.—M. C. Mengis. Means for Automatically Reviving Exhausted Telephone Pulsations.

This is a repeater system. L' is one line and L² another, each passing through a relay (2 and 3) and to



682,332 MEANS FOR AUTOMATICALLY REVIVING EXHAUSTED TELEPHONE PULSATIONS.

a receiver and secondary of an induction coil. Each receiver acts on a transmitter for repeating, receiver 19 on transmitter 21 and receiver 23 on transmitter 24. Each receiver is differentially wound, the windings of receiver



682,333—TELEPHONE TRANSMITTER.

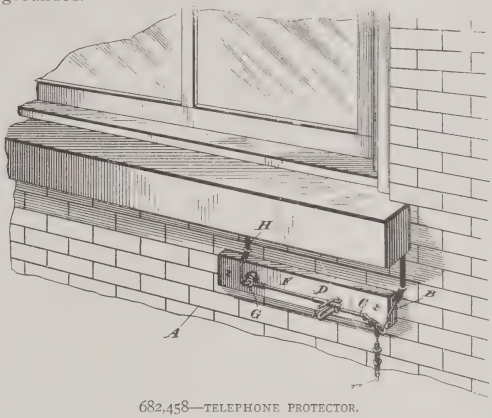
23 being both connected on one side to the secondary 27a and those of receiver 19 being both connected on one side to secondary 31. On the other side one coil of receiver 23 goes to its line L² and the other to an artificial balancing circuit 22a, while the coils of receiver 19 are similarly connected to line L' and artificial circuit 22 respectively. The effect of this mode of connecting is that speech coming over line L' is propagated into line L² through receiver 19 (the winding 18 alone being active), transmitter 21 and induction coil I, no effect being produced on receiver 23, by reason of the equal flow and equal effect of the currents in the two coils thereof. Similarly speech from line L² is propagated into line L', but without affecting receiver 19, and thus there is no repetition. In calling strong currents throw over switch 4-5 and cut out all local apparatus.

682,333.—M. C. Mengis. Telephone Transmitter.

A solid contact transmitter; 11-12 are fixed electrodes of carbon, carried on springs 14-15; 9 is the movable electrode, carried on the diaphragm.

682,458.—A. Deck. Telephone Protector.

This is a simple switch, made out of wire, whereby the telephone may be disconnected in stormy weather. F is the switch arm; D is the spring socket to receive the same, and E is a spark terminal gap, with one element grounded.



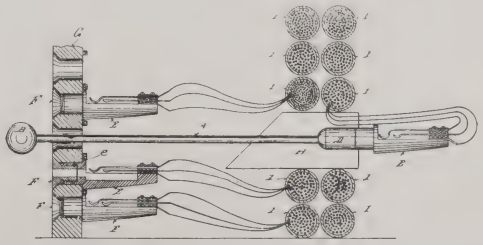
682,458—TELEPHONE PROTECTOR.

682,566.—W. S. Paca. Mechanism for Removing and Replacing Switchboard Jacks.

This consists of a rod with a handle and a screw threaded end D adapted to screw into a Warner multiple jack from the front of the board, and push the same back clear of the cables for repairs.

682,732.—F. R. McBerty. Supervisory Signal for Telephone Systems.

This is a scheme of circuits whereby the same cord circuits may be used on relay boards with lines of different character, the signals always meaning the same thing. In the drawing the station A' is supplied with talking cur-

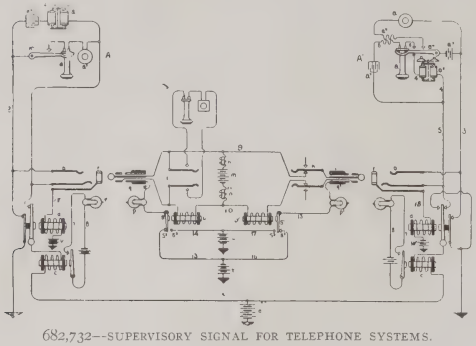


682,566—MECHANISM FOR REMOVING OR REPLACING SWITCHBOARD JACKS.

rent direct from central, while station A has a storage battery, charged from central by a constant flow of current and switched into a local circuit when conversation is carried on.

The supervisory relays o and o', main battery e, line

relays c and cut-off relays d, are all of ordinary type and arrangement, except that the cut-off relay of the line to A′ closes a short circuit to ground when it cuts off the line relay, so that the later will continue to receive current from main battery e, and so maintain its signal lamp extinguished, this relay closing the lamp circuit 8 when its armature retracts. The gist of the invention lies in the provision of two batteries t and u, for the supervisory circuits 12-15, these batteries both being grounded and their

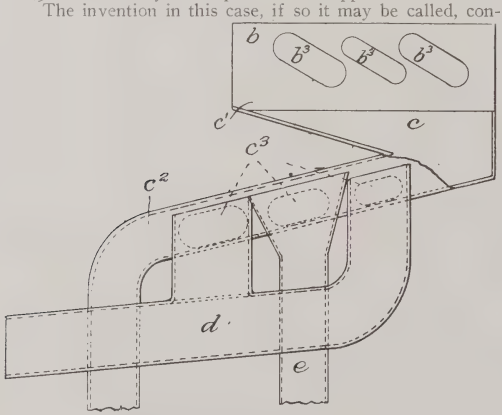


682,732—SUPERVISORY SIGNAL FOR TELEPHONE SYSTEMS.

polarity opposite. When a connection is set up with line 1-2, battery u is cut into circuit n-14-s3-s-p-12-q-r-18-d-v-ground. These batteries, n and v, being opposed, and one giving 4 volts, while the other gives 6, the resultant current is sufficient to energize cut-off relay d, but not to light lamp p. When a connection is set up with a line like 3-5 to station A′, no current flows from battery m during conversation and relay o′ is dead. Consequently battery t is thrown into circuit 16-s²-s′-15-p′-q′-r-18-d-w-ground. Here again the batteries are opposed and the resultant flow, as they are unequal, operates the cut-off relay but not the lamps. When either subscriber hangs up, however, the corresponding supervisory relay puts on a reversed battery, and then 10 volts is supplied and the lamps light.

682,986.—W. Gray. Telephone Toll Apparatus.

The invention in this case, if so it may be called, con-

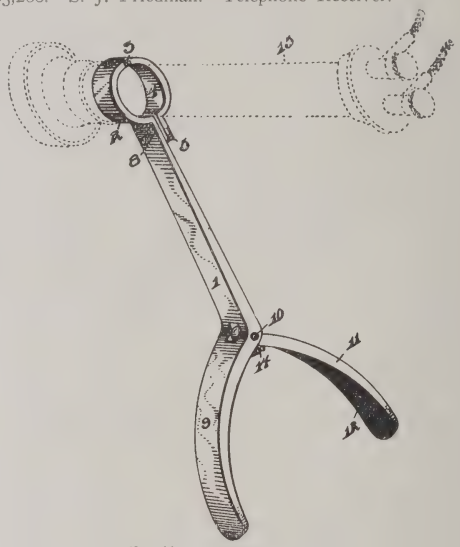


682,986—TELEPHONE TOLL APPARATUS.

sists in providing a runway and hopper c-c to catch coins that come through the trap openings b³ in a Holbrook chute (patented Aug. 30, 1892, 481,903), these being either put in the wrong slots by mistake or to "beat the machine." It is supposed here that a dime put in will roll down the runway c² and fall into the first opening to chute d, and so out to the depositor. A nickel will fall into the last opening, but a cent or two-cent piece will fall through chute e and be retained. The distinction seems to be finely drawn.

SEPTEMBER 24.

683,266.—S. J. Friedman. Telephone Receiver.



683,266—TELEPHONE RECEIVER.

A clamping holder for receivers to be fastened a-straddle of the shoulder. Spring 14 holds arms of fork together.

PERSONALS.

MR. PAUL W. BOSSART has been appointed eastern representative of the Kellogg Switchboard & Supply Company, with headquarters at New York City.

MR. G. HALLETT JOHNSON, western manager of the International Specialty Company, with headquarters at Chicago, was united in marriage to Miss Nell Olds Cochrill of St. Louis, Mo., on November 6. TELEPHONY extends its sincere congratulations.

MR. A. W. BRYANT, who is the consulting engineer of the Rhinelander Mutual Telephone Company, has been in Grand Rapids, Wis., inspecting the construction of the new system which is being placed in Grand Rapids. Mr. Bryant has nearly completed the exchange of the Rhinelander Mutual Telephone Company, which was formed last spring. This new exchange will have 250 telephones and cost about $14,000.

MR. WM. H. CRUMB has recently resigned his position as general superintendent of the Pittsburg & Allegheny Telephone Company at Pittsburg, and has opened an office at 1211 Monadnock building, Chicago, for the general practice of telephone engineering and contracting. Mr. Crumb is well known in Chicago and the middle West on account of the important position he held with the Pittsburg & Allegheny Telephone Company, and also on account of his prior connection with the Central Union Telephone Company, whose headquarters are in Chicago. Mr. Crumb is specially well fitted for the business he has recently undertaken, on account of his wide experience in both the constructive and operative branches of the telephone business, his unquestioned business ability, and his previous technical training at Cornell University, from which institution he was graduated in electrical engineering in 1894. All of his friends wish him, and predict for him, greatest success.

POLICE DEPARTMENT SYSTEM PAN-AMERICAN EXPOSITION.

Up to but very recently, all large cities where any system was required for keeping a report of the patrolmen when on duty, was a service using a form of circuit telegraph signalling apparatus. This form of system where the signalling apparatus requires circuit construction for the signalling in large cities where there are many other electrical circuits, it requires separate direct wire line construction for the telephones where the telephone is employed for reporting any matters other than the regular telegraph report signal or wagon call.

FIG. 1—CENTRAL OFFICE POLICE DEPARTMENT SYSTEM, PAN-AMERICAN EXPOSITION.

The police system employed for official use by the police and guard department at the Pan-American Exposition, this season, is a great departure from the old forms of circuit telegraph police systems, and was one of the most interesting features on the grounds to city electricians, police department chiefs, and other visitors interested in municipal police matters. This system is put on the market by the Municipal Signal Company of 1203 Marquette building, Chicago, Ill., and was designed and patented in 1891 by N. Banks Cregier of that city, after many years of practical experience in the police and fire alarm office in Chicago, during and after the period of his late father's terms of office as mayor of that city. This system, combining a telephone with a signalling apparatus, prevented its being manufactured and put on the market prior to the expiration of the foundamental patent on the telephone. Since Independent telephone apparatus is on the market this company has placed a number of its police systems in use, among which are the extension of service in Chicago, and an entire new system in the city of St. Paul, replacing the telegraph circuit system formerly employed.

The system at the Pan-American grounds was leased by the Exposition Company, and installed at the opening of the Exposition, having been in use during the entire season, for the police and guard department service. The system is divided into three stations, in which all reports are received. Fig. 1 shows the central office equipment at Station No. 1, located in the Service building. This is a board for fifty patrol box circuits, and ten private telephone lines. These boards are provided with two sets of indicators for each line and patrol box. The regular officers' report signal is a shutter drop, and one for each line is placed in the middle of the face of the board above the corresponding number of spring-jacks. In the center of the board are

mounted the telephone line visual signals, to which are connected the private telephone lines from the commandant-of-police's office, the sergeant's office, and the captain's office, to the sub-stations, and also trunks, to the main telephone exchange. Immediately below the visual signals are mounted the "Clearing Out" signals. Immediately above the regular reporting signals are mounted a set of polarized ringers with gongs, employed for the emergency or

NO. 2—THIRTY-LINE SUBSTATION PATROL BOARD.

wagon call signal; each set of bells is provided with a small numbered indicator which corresponds in number with the station patrol box, and indicating which bell was rung.

The board is equipped with a complete operator's telephone, and is also provided with a portable desk telephone, which may be connected as a duplicate of the regular operator's set. The board is also provided with a sufficient number of connecting cords so that one line may be connected with another, and connection made between the patrol boxes, the offices' lines and the public exchange subscribers.

Immediately in front of the plugs, on the plug shelf, are mounted a set of listening buttons—one for each line. When an officer reports, the operator presses the corresponding number listening-button, which directly throws into circuit the operator's telephone, thus avoiding the use of the connecting plugs. Provision is made for using a power-generator. A hand-generator is provided for emergency use.

Fig. No. 2 shows a sub-station desk switchboard in one of the tents in Guard Station No. 3. This sub-station board is an ordinary roller-top desk, and equipped for thirty patrol box circuits, and ten private telephone lines.

Station No. 2, located in the Dairy building, is provided with a main office switchboard, the same as Station No. 1. The three stations' switchboards are connected with direct wire trunk lines, so that connection may be made from any of the patrol boxes connected with any one of the boards, direct to any of the other stations, or any of the other station patrol boxes; as well as with the commandant's office, the other officials, and the main telephone exchange which is connected with Station No. 1 switchboard.

With the fifty-circuit board in Station No. 1 are connected by direct wire forty-seven patrol boxes. Forty patrol boxes are connected with the fifty-circuit board in Station No. 2, and twenty-six with the thirty-circuit board in Station No. 3. All lines are run with rubber-covered braided and twisted Hazard wire. In the central part of the grounds all wires are placed in conduits.

Fig. No. 3 shows one of the police boxes open, and a guard giving the regular reporting signal. Taking the receiver from the hook throws the drop on the central office switchboard, which corresponds with the number of box with which it is connected. When the signal is received, the operator presses the listening key corresponding in number, and the guard reports his name or number, of which the operator makes a record, as well as the time the report is given.

A hand generator is mounted in the box with its crank projecting through the inner door, which is seen in the center of the box shown. This generator is used as the emergency or wagon-call, and when operated rings the bell on the switchboard, and the shutter between the gong indicates the number of the box calling. The bells in the box immediately above the wagon-call generator, the answer-back signal, and are rung from the central office when a wagon call is received, to indicate to the officer calling that there is no trouble on the line, and the call has been received, and that the wagon is being sent.

Back of these bells are a pair of heavy compound ringers, with a pair of four-inch gongs placed in the top of the box, which are used for recall bells. The top of the box has an opening on each side for the emission of sound from these bells; these bells will ring only when the door is closed, being cut out by a spring key when the door is open. The recall bell is one of the most important features in a police system and is for calling the officers instantly to the box at any time from the central office. The recall bells on any of the boxes can be rung separately, or all in the entire district rung simultaneously.

Immediately under the wagon-call generator is mounted a long-distance transmitter, with the mouthpiece projecting through the inner door.

The receiver hook is a special platinum contact gravity switch, cutting out of the circuit the entire box excepting the recall bell, when the receiver is on the hook. The emergency call generator is provided with an automatic shunt, and cuts itself in when operated. The receiver is a strongly-built, double-pole horseshoe magnet, adjustable instrument, and is provided with a special weatherproof long conductor cord.

The apparatus is mounted in a heavy cast-iron weatherproof protection box of neat design, well-painted with

NO. 3—PATROL BOX OPPOSITE ELECTRICAL TOWER, SHOWN OPEN.

weatherproof paint; all main parts being mounted back of an inner door, excepting the receiver, which is provided with a weatherproof cord which enables the system being used in rainy and wet weather without affecting its working parts.

In this system no batteries are required excepting for the telephones, which are placed at the central office employing the central energy system. Ten small cells of storage battery give sufficient power for an entire system. In this way the cost of maintenance is reduced to a minimum,

and is a large saving over the amount of battery power required in the ordinary telegraph systems.

All lines being direct from the central station to the patrol box, and with but one box on a line, leaves it impossible to give false reports or to give the numbers of all the boxes on a circuit from any one of the stations.

In the direct wire system any defect or trouble on a line will affect one station only, and not an entire district as in the circuit system. The direct wire system also assures strict privacy in conversation, and it prevents any confusion in the receiving of calls when a number of reporting signals are given simultaneously with a wagon call. All lines terminating at a separate indicator on the board, and the wagon call being a distinct signal and indicator, enables the attendant to answer the latter immediately upon its receipt, and the regular reporting signals later without missing any call. Any special call by telephone can be answered instantly and transmitted or transferred to any part of the system or to the public exchange.

Fig. 4 shows patrol box No. 37 in Station No. 1, located at the entrance of the Temple of Music, from which the ambulance was called at the time of the shooting of our late President McKinley. The police records show that the call was received at the police station at 4:07, was transmitted to the Emergency Hospital at 4:08, the electric ambulance leaving at 4:09, and returning at 4:17.

It is said that this system was one of the large means in the protection of the Exposition, and greatly facilitated the work of the police department. By its use, it is reported, the same protection was given, which otherwise would have required a much larger force, and its adoption proved a great saving in expense to the Exposition. It is claimed that this system is adapted for small towns and large manufacturing plants as a watch service system and for public park patrol service, as well as for large cities.

The company was organized under the laws of the state of Illinois, with a capital of $100,000, fully paid. Its president, John Mackin, is one of Chicago's millionaire real estate owners. He is also president of a large mining company, which has one of the richest gold-producing fields in Colorado, and has large holdings in many Lake Superior copper interests.

FIG. 4—PATROL BOX NO. 37, FROM WHICH AMBULANCE CALL WAS MADE WHEN PRESIDENT MCKINLEY WAS SHOT, POLICE DEPARTMENT SYSTEM, PAN-AMERICAN EXPOSITION.

The treasurer of the company, Mr. R. N. Stites, is probably the best known restaurant man in the West, being secretary and manager of Rector's.

Mr. N. Banks Cregier, vice-president of the company, whose portrait is shown, and the inventor of this system, is a practical electrician, having for years been in the Chicago police and fire alarm office, and at one time owning and managing a private fire department in that city.

Henry Shafer has been the secretary of the company since its organization, and Paul M. Krahmer has recently taken the position of general manager of the company, both of whom are well known in the electrical field.

UNDERGROUND CONSTRUCTION.

BY D. R. CRAIG.

Article II.

In the laying of conduit for underground telephone construction it has been the universal practice heretofore to prepare a bed for the conduit by spreading a layer of concrete, from four to six inches thick, on the bottom of the trench, and then after the conduit is laid to cover it on the sides and top with an equal thickness of concrete. There are, perhaps, many engineers who will take issue with the writer when he states that in the majority of cases this concreting may be eliminated without impairing the efficiency of the plant, and at the same time making a very great saving in its cost and the labor of putting it in. No one was more skeptical than the writer of the omission of what he then considered one of the most important features of the work as this concreting, and it was only after a release from all responsibility for any subsequent trouble that might result that he ever agreed to have any work under his charge installed in that manner. So thoroughly convinced has he become, however, through practical experience, that the concrete is not a necessity, that he would never use it except in aggravated cases, where the earth is soft and mushy or there is danger from too close proximity with other pipes by reason of frequent subsequent excavations. The largest manufacturer of conduit in the world says that concreting is an unneccessary expense and does not advocate its use. Whenever the work is installed in good, solid earth, rock or closely packed gravel, a perfectly safe job can be made by laying the duct on a thin bed of mortar spread in the bottom of the trench and then covering the duct with a similar bed of mortar, being careful to see that the joints in the sides of the conduit are also closed with mortar. This coating of mortar need not exceed half an inch in thickness. There are not a few plants constructed in the manner as set out in the foregoing that are giving as good service, with as little trouble encountered in the alignment of the duct and its solidity, the protection it has, or the drawing in of cable, as those plants upon which much more money has been spent in imbedding the conduit in a shell of concrete. In places where the bottom of the trench is soft or where crossings may be made over or under other pipes that may be frequently uncovered, it is well to give your work the extra protection the concrete affords, but except in these extraordinary cases the concreting may be dispensed with without harm.

In order to make the installation of underground construction perfectly plain to the uninitiated we will take as an example one block of work on a city street and follow it in detail from beginning to completion. We will suppose that the block is four hundred feet long, with an alley in the center, and that the street is paved with brick. The permit having been secured from the proper authorities, the work must be laid out. We will assume that a lead of twelve ducts is to be laid, and that in the four hundred feet are three manholes, one at each end of the block, which we will designate as Manholes Nos. 1 and 3, and one in the center of the block, opposite the alley opening, which we will call Manhole No. 2. Great care should be exercised in the exact location of these manholes, taking into consideration that they are distributing or separating points for other leads and laterals, and must be used for extending the line, not only up and down the same street, but into side streets should the plans call for it or the occasion require. The lead should extend from one manhole to the next in a straight line, and can be laid any distance from three to nine feet from the curb line. The location of existing pipes should govern this to a large extent. Water and sewer pipes are usually so deep that they give but little trouble, but should a gas main extend through the block at a distance of six feet from the curb the obvious thing to do is to lay your work outside of it, toward the center of the street, and thus avoid encountering the service pipes leading into almost every building. Of course it is impossible to avoid them all for some extend to the opposite side of the street; but, as a rule, these are fewer in number.

The outside diameter of a piece of single duct conduit is four and one-half inches. In putting in twelve of these we would lay three tiers high and four wide. Thus the ducts themselves would require a space eighteen inches wide in the trench, not allowing for mortar. Then there should be working room on each side of the conduit, so that the total width of the trench should be twenty-eight or thirty inches. It is a mistake to make the trench too narrow, for the work does not go in readily and it makes the quarters too crowded for your workmen to perform their labor rapidly and advantageously. The extra time and labor consumed in making a trench roomy as to width is well expended. We will say the trench is to be thirty inches wide. This should be marked out with a line on the brick pavement, and your men started to work. The brick should be taken out carefully and piled to one side to be used again in repaving. If the brick is laid on concrete foundation there is little use in saving the concrete, for a second-hand article of that kind is of little or no use. If the pavement is merely laid on sand it would be well to preserve it separate from the dirt that comes from the trench, for it can be used again as far as it will go in relaying the brick.

In digging the trench the sides should be carried down straight unless the soil is sandy or loose and inclined to cave, then the ditch should be made wider at the top and carried down on a slant leaving the required width at the bottom. In aggravated cases to prevent caving it may be necessary to use sheeting; that is, boards laid lengthwise along the sides of the trench and held in place by shorter boards extending across the ditch and driven tightly in place to form braces.

It is assumed in this case that a depth of forty inches is the best at which to escape encountering pipes which may already be under the street. We will also assume that there is a slight down-grade on the surface of the street from Manhole No. 1 to Manhole No. 3. By excavating the trench exactly forty inches deep all the way we will thus have the same slight down-grade for the conduit, and this is as it should be. As stated in the first article in this series there should be a slight grade between manholes for the purpose of drainage of any moisture. This grade can run in one direction from one manhole to the next, or may be made by making a summit between the manholes and dropping slightly in each direction until the manhole is reached. Care should be taken not to get this summit too sharp or abrupt, for that would make the drawing in of cable very difficult over this high point by reason of the extra friction encountered, and if the crown is too sharp might preclude the possibility of it altogether.

When the digging has been finished the bottom of the trench must be prepared for the reception of the conduit, must be "leveled." If an instrument is not convenient for this use, good work can be done with a straight-edge twelve or sixteen feet long, and a carpenter's level. By moving along the trench and putting the straight-edge on the bottom, every twelve or sixteen feet, the level will show the high and low places, which must be taken out or filled up until the required grade is reached. One man with a shovel can do this work rapidly. Loose earth thrown in to fill low places should be scattered in thin layers, each one well tamped down with the back of the shovel to make smooth and solid. This done the work of laying the conduit can begin.

In excavating the trench the earth should have been thrown well back on one or both sides in order to give room for the convenient handling of the mortar and conduit, and for the masons' helpers to move about without tumbling any dirt back into the trench. The mason being ready for work, should first lay a line along one side of the trench from Manhole No. 1 to Manhole No. 2. This line will represent one side of his conduit, which should be laid flush with it.

The mortar used in laying the work should be composed of two parts of clean, sharp sand to one of good cement mixed with water to a consistency a little thinner than mortar used in laying brick. Portland cement is not necessary, and, in fact, its tendency to set quickly mitigates somewhat against its use. The mixing of the mortar should be in competent hands and well looked after. It should be thoroughly mixed and furnished to the mason at just the right consistency. A poor batch of mortar brings the idleness of the masons and their helpers until a good batch is mixed, and no poor mortar should be allowed to go into the job.

As stated before a twelve-duct lead of conduit would in this case be made or "built up" by laying the conduit four wide and three high. It could be laid three wide and four high if the occasion should require. A thin coat of mortar should be spread in the bottom of the trench and the first layer of conduit laid on that, care being taken to break joints. This makes the completed job much stronger. The conduit is laid lengthwise by butting the ends together. When the first tier is laid for two or three lengths a thin coat of mortar should be spread on top and the second tier laid in the same manner, and that followed up with the third tier laid on the mortar spread on top of the second tier. Then the top should be covered with a slightly heavier coat of mortar than was used between the ducts. In spreading the mortar it is apt to squeeze through the joints where the ducts butt together and project on the inside of the duct, setting and forming a hard projection there, which might injure the cable or interfere with drawing it in. To prevent this mandrels are used when the duct is laid. These are cylindrical pieces of wood, about three feet long, and slightly smaller than the inside diameter of the duct. On the front end of these is fastened a hook by which they may be drawn along in the duct as the work proceeds, and on the back end is a rubber gasket slightly larger than the inside diameter of the conduit. These mandrels lie in the duct and at stated times as the work progresses are drawn ahead by the mason, who reaches and pulls them with a small iron rod, about three feet long, with a hook on one end, which catches the hook on the front end of the mandrels. As these mandrels are pulled forward the rubber gasket on the end acts as a swab and cleans off the wet mortar projecting through the joints, leaving a clean, smooth surface inside. They should be taken out from time to time and the accumulated mortar cleaned off the gaskets. Every duct should have its mandrel, so that in the twelve-duct lead twelve mandrels would be used. The mason should be instructed to remember to pull his mandrels forward at the proper periods, for if he neglects it his work will soon be beyond a point where he can reach them with his hook, and necessitates some of his work being taken up to reach the forgotten mandrel, which would, if left, obstruct the duct. This seems a little thing to mention, but a mason, especially one new to the work, is very apt to forget it until he becomes accustomed to it, and it is a vexing delay in the work that not infrequently occurs. The use of the mandrels for these conduits is furnished by the manufacturer.

Before the conduit is laid in the ground the inside of every piece should be examined, which can be done where it has been piled on the street convenient to the work, whence it has been hauled beforehand. This is for the purpose of discovering any projections or burrs that may have been in the clay and burnt into the conduit. These sharp projections would tear or obstruct a cable and are removed with a tool provided by the manufacturer, or purchased, called a reamer. This inspection is rapidly done at very slight expense and is a precaution well justified.

Two masons, as well as one, can work on a twelve-duct lead, the first one taking, say six of the ducts and starting first, the second one following him up laying the other six ducts. In larger leads even a greater number of masons can be used, the work of course going more rapidly in that case. The duct is laid as set out in the foregoing, from one manhole to the next. The method of entering and leaving the manholes with the conduit, and the construction of the manholes themselves, will be taken up in another article for that is a subject in itself.

The description just given is for the laying of single duct conduit. Where multiple duct is used the procedure is somewhat different. The bottom of the trench is covered with concrete or not, as the builders desire. A twelve-duct lead of multiple conduit would be best laid by using three pieces of four ducts each, two pieces laid side by side on the bottom, and one piece on top of these in the center. These are not laid in mortar but are butted together and kept in alignment and place by an iron dowel pin extending from a hole in the center of one piece to a similar hole in the next piece. No mandrels are used with these conduits, and to prevent the mortar or concrete from running into the joints they are wrapped with a strip of burlap or tarred paper, which holds the concrete outside the joint until it sets, when there is no danger of it getting inside the duct. The joints are covered with either mortar or concrete, and the whole job may or may not be covered with concrete, though the writer thinks that in ordinary cases it is unnecessary.

The conduit being laid, then comes the work of refilling the trench and repaving the street. This task of getting the dirt back into the trench in a proper manner is not the least important part of the entire job. Loose methods in this part of the construction are sure to cause annoyance and expense in the future. The dirt will settle, causing the pavement above it to do the same, and this will result in a complaining public, the bringing down around your ears of city officials and the task of doing over, perhaps several times, what should have been done right in the first place. The adage, "A stitch in time saves nine," is admirably applicable here. The secret of getting a trench filled as it should be is contained in two words, "tamp thoroughly." After the mortar on the conduit has been given a reasonable time to set the work of filling in may begin. It is well to lay cheap lumber over the conduit before the dirt is thrown in. This would not be any great protection but would serve as a warning to workmen excavating at some future time, showing that there is work underneath and care must be used. The space at the sides of the conduit must be filled first. It should be done carefully and thoroughly, and tamped hard and solid. One man shoveling dirt into the trench to two men tamping is a good proportion, and the dirt should not be shoveled in too fast. This should be watched closely, for there is an inclination on the part of workmen to hustle the dirt in whether it is well tamped or not. Some builders "flush the ditch," that is, pour water into the trench as the dirt goes in, but the writer does not advocate this method. It is apt to make the earth spongy and result in subsequent settling. Dirt thrown back into the trench just as it came out, and thoroughly tamped, packed hard, makes the better job, and is not likely to give future trouble. If the pavement is laid on concrete, the dirt should be filled in to a level with the bottom of the concrete, as shown on the sides of the trench, then new concrete made and filled in to a depth to correspond with that already under the brick. This concrete should be composed of five parts of crushed rock, two parts of sand and one of cement. It should be allowed to set hard, then a coating of sand thrown on and the brick relaid. In spreading the sand on the concrete a very slight crown may be left in the center of the trench, thus allowing for what little settlement, if any, there may be. Sand should be swept into the spaces between the brick and a thin coating of sand left on top to work its way into the crevices by the action of traffic.

"TELEPHONY is the best telephone paper published so far as I know and I do not want to do without it.

WM. R. L. DWYER, JR.,
New Petersburg, Ohio."

A TELEPHONED MURDER.

BY FRANK GOEWEY JONES.

The office of Judge Horton, attorney-at-law, was in the extreme northwest corner on the eighteenth floor of the Majestic building on lower Broadway. It was more tastily furnished than most law offices in New York City, a fact accounted for by Horton's well-known fancy for art and bric-a-brac. It was a large square room with windows on two sides and the other two covered by rows upon rows of books. The floor was softly carpeted and a dozen easy chairs were strewn carelessly about. Near the center was the only really business-like feature of the room, a flat-topped table, upon which were a dozen letter files, pens, ink, blotters, paper, a book or two and an ordinary desk telephone connecting with the city exchange. A shaded electric light hanging directly over the desk gave light when the room was used at night. The other offices of the suite, occupied by clerks and stenographers, opened into a corridor leading from the door in front of the judge's desk and running the length of the building. This door was usually kept closed, the judge calling for a clerk or messenger by pressing an electric button on his desk.

The day had been a trying one for the judge, spent almost altogether in the courtroom in the trial of a very important case. Horton had not been able to complete his work before dinner, and after dining at his club had returned to the office in order to finish his labors. He took out his watch as he entered the elevator and remarked to the night watchman that it was precisely 8 o'clock. When the elevator boy let him out on the eighteenth floor he walked briskly to the door of his office, which the boy heard slam behind him as he went in. That was the last time that Judge Horton was seen alive by anyone save his murderer.

Next morning when the clerk opened the office and went into the judge's room to dust up, as usual, he found the lifeless body of his employer lying half across his desk, with a powder-burned hole in the breast of his coat directly over the heart, showing how Horton had come to his death. The murderer had approached, unseen by his victim, to a point directly in front of the judge, seated at his desk, and had fired before the sitting man had a chance to rise from his chair. Death had been instantaneous. There were no signs of a struggle. Not a paper or book was disarranged on the desk. The judge lay there, dead, with his arms extended before him and his head drooped to one side. The body was stiff when found, but the pose was that of a man who had fallen asleep over his work. A valuable ring which Horton wore on one finger, his gold watch and his well-filled pocketbook had not been touched, and, so far as could be learned by the strictest examination, nothing else had been taken. Robbery was evidently not the object of the murder. The assassin had escaped through the corridor of the general offices, as an emptied cartridge, found next morning on the floor, showed. There seemed to be no other clew whatever. No strangers or suspicious-looking persons had been seen entering or leaving the building after Horton came in. After the most rigid examination of everything in the office and cross-questioning of everyone who might have knowledge of any facts which would assist them in their quest, the detectives were compelled to admit that they had thrown absolutely no light upon the mystery. It was not until after three days had passed and every paper in New York was denouncing the police department for its inability to find a trace of the murderer, that a chance word dropped by the clerk who had found the body gave the first definite clew in the case. This clerk, who was a nervous, excitable fellow, had immediately on discovering the judge's corpse, telephoned to the police, using the telephone on the dead man's desk. He did not think of it at the time, but afterward recollected that the receiver was not on its hook, but was lying close beside the judge's left hand, on the office desk. He was a shrewd young man and instantly divined the importance of this trivial circumstance. The chief of detectives was visibly pleased when he heard of it and took immediate steps to avail himself of the benefit of the new clew. The exchange with which Horton's telephone was directly connected was visited by the chief himself, who had set his heart on solving the mystery of the baffling case.

The records of the "central" office gave the name of Molly Sullivan, a bright Irish girl, as that of the night operator on Judge Horton's section of the switchboard on the night of his death. She remembered a call from the dead man's number and told the officers a very startling story. Replying to the questions of the detectives, she said: "Sure, I remember a call from 2872. It was about 9 o'clock in the evening, after I had just eaten a bite of lunch, as I usually do at that time of night. I was sitting at my section when a call came in and I said 'Hello' in answer to the signal. I did not have time to get any answer back before a terrible roar came into my ears, kind of like an explosion or something. It made my head ache it was so loud. I thought then it was something the matter with the line that made it. Right afterward I heard somebody say, '———, you damned thief; you stole all my money and now you have stolen my wife.' I did not hear any other words, but somebody seemed to be running over the floor. The 'disconnect' signal did not come in and I supposed the party had gone off and forgotten to hang up his receiver, so after ringing him two or three times I made out a trouble sheet and gave it to the chief operator, so as to have an inspector go round in the morning to see if anything was wrong." When asked by the chief of detectives why she had not said something about her experience before, and if she did not connect it with Horton's murder, the girl said: "Why, we have hundreds of strange things happen every day on the wire, and I do not pay any attention to them any more. Lots of times men get mad and swear over the telephone. I never thought anything about it that night more than ordinary. The kind of exploding noise did seem awful funny to me, but I had forgotten all about it by morning. I do not read the papers much, so I did not know who it was got killed. I would have told about it before if I had thought it was important, but it was not any different from lots of things I hear most every day."

The inspector who had tested out the line on the day following the murder was next seen and said that he found nothing wrong with the telephone when he inspected it. He said he did not know who sent in the "inspector call," so he had simply made the ordinary tests and report. He did not connect the trouble on the telephone in any way with the murder, but thought it only a coincidence that he happened to be sent to Horton's office the morning after his death. With the clew of the operator's story, the detectives set to work afresh and before night they had arrested a man in Brooklyn, against whom a client of Horton's had been conducting a law suit, involving considerable property. Horton had tried the case for his client and had won a decided victory over the Brooklyn man. In the course of the trial, evidence had been introduced showing that the defendant was a man of dissipated habits, and that his morals were of the blackest. Learning of this evidence, the wife of the defendant had decided to obtain a divorce from him and had come to Horton and asked him to try her case, also. He had secured for her a legal separation and had obtained an order of court for the payment of alimony, which had been deeply resented by the divorced husband.

At the trial of the murderer it was shown that he had been drinking heavily on the afternoon preceding Horton's death and had talked madly about "getting even" with some enemy. He had left his boarding house shortly after 3 o'clock, taking a car for New York, and did not return until next morning about 10, when he went to bed, sleeping most of the day. He bought the evening papers and was particularly interested in the account of the lawyer's death. Evidence was introduced which showed that he was seen entering the Majestic building about 5 o'clock in the evening, taking the elevator to the twentieth floor. No one had seen him leave. Next morning he was again observed leaving the

building about 8 o'clock. In his room a revolver was found with one fresh cartridge and five older ones, corresponding in size with the bullet found in Horton's body. A number of threatening letters, written by the prisoner and addressed to the lawyer were found among the papers in Horton's desk. The prisoner was unable to give any satisfactory explanation of his movements on the night of the murder, and the jury, after being out six hours, pronounced him guilty of murder in the first degree, upon which verdict he was sentenced to death.

Before the execution the murderer confessed his crime and said he had concealed himself in a dark corner behind the elevator until all the tenants of the eighteenth floor had left the building for the day, then with a skeleton key he had unlocked Horton's door, and, entering, locked it again on the inside. He knew that his intended victim often worked late at night, returning to the office after dinner. He stood for a half hour between the bookcase and the wall in one corner of the office until Horton came in. It was his first intention to shoot the lawyer from where he stood, but he feared that his aim would not be true and the noise of the shot would be heard by the elevator boy or the janitors. So he waited for an hour in his hiding-place until Horton, who had been writing at his desk, reached for the telephone and took the receiver from its hook. Two seconds afterward the assassin, taking advantage of his victim's occupation with the telephone, had stepped in front of Horton, and, pressing the pistol to the lawyer's breast, fired the shot which Molly Sullivan had heard over the telephone. The murderer gloated a moment over his victim and cursed him with the words which the operator heard.

At Sing Sing prison, two months after, the last chapter of the mysterious murder and its punishment were written.

TRADE NOTES.

THE CHICAGO TELEPHONE SUPPLY COMPANY, Chicago, reports shipment of a complete telephone exchange equipment to South America.

THE VARLEY DUPLEX MAGNET COMPANY has moved its Chicago office to 82 Lake street. Mr. C. L. Hibbard is the western agent for this company.

THE KEELYN TELEPHONE MANUFACTURING COMPANY, Chicago, is mailing to the trade an attractive wall poster, containing cuts of the apparatus manufactured.

THE H. C. ROBERTS ELECTRIC SUPPLY COMPANY, Philadelphia, Pa., has taken the agency for the Whitney instruments, and has in stock a full line of the regular sizes.

THE JOHN M. KLEIN ELECTRICAL WORKS, San Francisco, will control the sale in the state of California of apparatus manufactured by the Chicago Telephone Supply Company, and will carry a complete stock of same.

THE ELECTRIC APPLIANCE COMPANY, Chicago, is calling special attention to its number 36 cabinet type wall telephone, which is made in several styles and fully described in a circular which the company is mailing to the trade.

THE COLUMBIA TELEPHONE MANUFACTURING COMPANY, Chicago, is preparing to enlarge its factory in order to meet the growing demand for its output. The company has been obliged to increase its facilities by putting on a night force.

THE MANHATTAN ELECTRICAL SUPPLY COMPANY of New York received orders recently for general electrical supplies from South America, Great Britain, British India and Australia. The export business of this company is increasing very rapidly.

THE MONARCH FIRE APPLIANCE COMPANY, New York, will mail upon request its "Kilfyre" booklet, which is red and interesting. It shows the advantage of telephone exchange companies having "Kilfyre" on hand in case of fire and contains a letter from a Texas exchange manager, who says that "Kilfyre" was used with marked success in extinguishing a fire which started in the switchboard room. The names of a number of telephone exchanges using the company's product are given.

THE NATIONAL AUTOPHONE COMPANY, Chicago, has just issued a very attractive booklet, describing the Autophone telephone and telegraph fire alarm system. The book is illustrated and contains some valuable information. It will be sent upon request if this publication is mentioned.

THE AMERICAN ELECTRIC FUSE COMPANY, through its New York manager, Mr. M. B. McCurdy, has secured what is said to be one of the largest government orders for protectors ever awarded. The American Company reports the largest business during the month of October in its history.

M. S. CONNELLY, Allegheny, Pa., has opened a wholesale and retail electrical and telephone supply department in connection with his construction business. Mr. Connelly has purchased the entire stock of the M. S. Connelly Company and will continue the business. Correspondence is invited.

MESSRS. WM. J. MURDOCK & CO., Chelsea, Mass., have ready for mailing a booklet entitled "It's Solid; How and Why." It is said to be of vital importance to anyone interested in telephones and is addressed to "Mister Exchange Manager." It will be mailed free if TELEPHONY is mentioned.

THE CENTRAL ELECTRIC COMPANY, Chicago, owing to the heavy demand for Okonite wires for telephone use, has been compelled to carry in Chicago a large stock in order to make prompt shipment. The company will quote lowest prices on telephone supplies of every description; prompt shipments.

THE U. S. ELECTRIC MANUFACTURING COMPANY, Butler, Pa., will send for the asking its latest booklet on the Ideal automatic telephone system. The system is designed for exchange service, farmers' lines, factories, mills, warehouses, railroads, gas lines, small towns, public buildings, offices, schools, hospitals, asylums, etc. In writing mention TELEPHONY.

THE NATIONAL CONDUIT AND CABLE COMPANY, New York, is to furnish the cable required for an extension of the Glasgow Corporation Tramways. The value of the contract is said to be about $250,000. The cable will be manufactured at the plant of the company at Hastings-on-the-Hudson.

THE CENTRAL ELECTRIC COMPANY, Chicago, has published a new price list, dated November 1, which is devoted exclusively to the telephone trade. Included in this price list are telephones, telephone construction material, telephone parts, batteries and various other supplies. Anyone desiring a copy can obtain it by addressing the company

THE INTERNATIONAL SPECIALTY COMPANY, Morton building, New York, and Monadnock block, Chicago, has just issued a very attractive booklet on "Schwarze" telephones. These telephones are of highest quality and are having a large sale. The prices quoted in the booklet are extremely low. A large catalogue of all the specialties manufactured by the company is in preparation, and when issued will be mailed upon request.

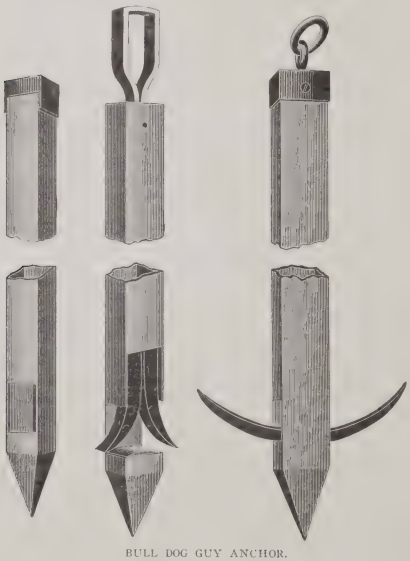
THE AMERICAN ELECTRIC FUSE COMPANY, New York and Chicago, has just closed a two years' contract to supply the Eureka Electric Company, Chicago, with Rolfe protectors, which will be used in all Eureka installations. Large contracts have also been made with the Western Telephone Construction Company and other leading telephone manufacturers. Orders for over $10,000 worth of Rolfe protectors have been closed during the past month.

THE BULL DOG GUY ANCHOR.

In the illustration below is shown a test made with the "Bull Dog" guy anchor, which proves that this anchor is all that is claimed for it by the manufacturers. In the test other anchors were tested as well; these were lifted from

TESTING BULL DOG GUY ANCHOR.

the ground with a strain of 2,400 pounds. The Bull Dog could not be lifted with available strain of 5,000 pounds, the rope, which was tested to 5,000 pounds, breaking repeatedly. The anchor was taken from its hold only after using



BULL DOG GUY ANCHOR.

a very long lever and with a strain that could not be measured. The Country Home Telephone Company, Chicago, manufacturerers of the Bull Dog anchor, guarantee that it cannot be raised from ordinary soil with a 5,000-pound strain.

"I am very much pleased with the journal and hope you will keep it up to its present standing.

Mutual Telephone Co.,
Petersburg, Va."

SOME NEW TELEPHONE DESIGNS.

The accompanying cut illustrates the new form of 1902 Keelyn receiver, recently designed for the Keelyn Telephone Manufacturing Company. It has several improvements, particularly in the character of shell. This is made of a rubberoid composite, which is said to be very durable, strong and unchangeable, and unaffected by heat, cold or dampness. Its interior construction is shown in the illustrated advertisement on page xxviii of this issue. There are also illustra-

NEW KEELYN RECEIVER.

tions of three new designs of Keelyn 1902 telephones, which are claimed to be models in point of high-grade mechanism. The Keelyn Company has certainly made some strong advances recently in meritorious directions. Its new six-party line bridging telephones have made a decided hit.

NEW APPARATUS FOR JACKSON MICHIGAN.

That every effort is being put forth by the People's Telephone Company to insure the citizens of Jackson, Mich., its excellent service, is demonstrated by the energetic and painstaking manner with which its work is being carried on in every department. The company has placed 'phones on exhibition made by the Kellogg Switchboard & Supply Company of Chicago, which are pronounced by experts as superior apparatus.

The switchboard being made for this company is a 3,000-line "Major" multiple board. It will have an equipment of 1,640 lines. Included in this contract is a toll board with equipment of 30 lines, a chief operator's desk, 1,400 wall telephone sets complete. The woodwork of this board is to be mahogany. The framework is heavy angle iron construction, which makes a very rigid structure and insures permanent alignment for the apparatus contained therein.

The power plant will consist of two sets of 11 cells of storage battery each. These storage batteries are made up of type F-S elements chloride accumulator, the batteries to be charged by a Holtzer-Cabot type M. P. D. direct con-

nected charging set, the generator side of which is a special telephone machine built for a range of from 20 to 30 volts, the primary side to run on a voltage to be 110 or 220 volts direct current. A second machine of this description is provided for reserve.

For ringing, Holtzer-Cabot type B class D. c. 2 [illegible] motor will be provided, having a primary to run on 110 or 220 volts and a secondary to give pulsating and alternating currents of 110 volts (at no load), and a reserve machine of the same description, but with a primary of 24 volts.

The power switchboard will be of marble, supported by an iron framework. Upon this board will be mounted all the switches, terminals and measuring instruments necessary for a complete and thorough manipulation of the motor and ringing generators, and the storage batteries.

A CHICAGO SUPPLY HOUSE.

The accompanying illustration shows the building occupied by M. B. Austin & Co., Chicago, one of the largest electrical and telephone supply houses in the world. This

company has forged rapidly to the front, occupying the entire building. Shipments of supplies are made promptly direct from stock, and lowest prices are quoted on everything handled. The company invites correspondence.

THE VICTOR ELECTRIC COMPANY.

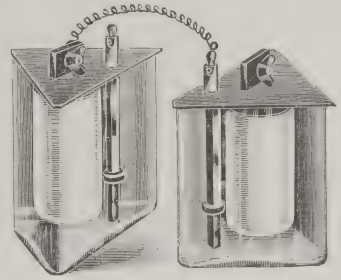
Among the specialties manufactured for the telephone trade by the Victor Electric Company, Chicago, is the Victor

GENERAL OFFICES VICTOR ELECTRIC CO., CHICAGO.

Winding Motor, which is meeting with marked favor. The company will shortly place on the market other telephone specialties. The accompanying cut shows the company's general offices. The officers of the company are: L. Glick, president and treasurer; C. F. Samms, vice-president, and J. B. Wantz, secretary.

NEW BATTERY PRODUCT.

The La Salle Electric Company, Chicago, succeeded to the business of the La Salle Electric & Engineering Works in the manufacture of bag batteries for telephone work. Mr. F. W. Pringle, whose cut appears elsewhere in this issue, is president of the company. The battery department of the La Salle Company is in charge of Mr. M. M. Clark, who has



been in the battery business in Chicago for nineteen years and is one of the best-known battery men in the United States.

The new battery jar made by this company, as shown by the cut, is adjustable and can be used in many cabinets which have been designed for dry batteries, but where it is found desirable to get greater strength and more service than the ordinary dry battery will give.

Mr. Clark is a believer still in the supremacy of the Leclanche porous cup and bag battery, which has been standard for so many years.

All materials entering into the "La Salle" batteries are carefully tested before they go into the manufactured article. Nothing is omitted which will insure the excellence and long life of the company's product. Correspondence is invited from prospective buyers.

COMMERCIAL ELECTRICAL SUPPLY COMPANY.

The Commercial Electrical Supply Company of St. Louis, Mo., is one of the leading telephone and electrical supply houses in the West. The company was organized in

1893, and it has been steadily increasing its business through the energy and ability of its officers, who are W. T. Nolker, president; L. T. Nolker, vice-president and treasurer, and W. H. Nolker, secretary. The company occupies its own building and carries a very complete stock of everything electrical.

A NEW MANUFACTURING COMPANY.

One of the important changes in Independent telephone manufacturing circles is the resigning of Henry Shafer as manager of the Stromberg-Carlson Telephone Manufacturing Company, and as secretary and treasurer of the Continental Telephone Construction Company, to accept the position of president of the International Telephone Manufacturing Company of Chicago.

While for the past year, owing to poor health and long hours, and continued close attention to detailed office work for several years previous, he has given most of his time to outside work, in connection with the construction company, he has, however, kept in close touch with the manufacturing interests. In his new position, as head of the International Telephone Manufacturing Company, an Illinois corporation with a capital of $100,000, from what is known of the parties who are connected with the company, and of the system and apparatus it will manufacture, Mr. Shafer will have ample scope for his talents. The secretary, and one of the directors of the company, Mr. John C. Burmeister, is one of Chicago's most conservative business men. He has owned a good printing establishment for the past twenty-five years, and has had considerable success in the real estate and loaning business. He is one of the founders of the German Hospital of Chicago, one of the largest, best organized and equipped institutions of its kind in the West, of which he has been since its establishment the secretary.

One of the other directors, and the general counsel of the company, Mr. D. A. Clithero, of Warvelle & Clithero, attorneys, is one of Chicago's most prominent and successful lawyers.

Among the other stockholders of the company are such men as Mr. Paul Weignicman of Chicago, manufacturer of electric belts and other electrical specialties, and contractor and builder of electric plants of all kinds.

Mr. Shafer's affability, and his fair and square dealings at all times have made him many friends in the telephone field, and the new company of which he is the head, has the best wishes of all who know him.

MR. PAUL M. KRAHMER.

Mr. Paul M. Krahmer, traveling engineer for the Stromberg-Carlson Telephone Manufacturing Company, has resigned, and taken the position of vice-president and general manager of the Continental Telephone Construction Company, with offices at 1203 Marquette building, Chicago.

Mr. Krahmer is one of the most experienced and best-known telephone and electrical engineers in the West. He is eminently fitted for the position and will have direct charge of the engineering work for this company, which is in the field for electrical construction work of any kind, as well as building telephone exchanges.

Mr. Krahmer began in the electrical field in the construction department of the Western Union Telegraph Company in 1870, in the southern states. After five years in this position he went with the Helenbecker Forge Company of St. Louis, Mo., in their railway equipment, casting and forging department. He then for two years was in the line construction department of the Bankers' & Merchants' Telegraph Company of Chicago, after which he was for several years with the Northwestern Electric Gas Lighting Company, wiring large office buildings and hotels for electrical lighting and enunciator systems. He then went with the Chicago Telephone Company as a line trouble man, and after a year in this department he was transferred to the equipment department, where he remained for three years, having in charge the instrument installation department. In 1889 he resigned, and took a position in the construction department with the Sprague Electric Equipment Company, installing street car systems in a number of cities in the western states. Early in the '90's he took the position of wire chief with the Chicago Telephone Company, having in charge the removal and transferring of the Oakland office, one of the largest offices in the city, in which position he remained until early in 1899, at which time he entered the Independent telephone field, taking a position as general superintendent with the Mutual Telephone Company of Des Moines, having in charge the reconstruction of their plant.

Mr. Krahmer's experience for over thirty years in the electrical field has been with first-class work, and his long connection with the Bell companies has made him thoroughly familiar with all classes of telephone and general electrical work.

INDEPENDENT TELEPHONE ASSOCIATION OF MAINE.

The Eastern Telephone Company tendered a banquet a short time ago to managers and directors of minor companies controlling local lines in Western Maine. About 60 persons were present. An association was formed, to be known as the Independent Telephone Association of Maine, with these officers: President, M. S. Bird of Rockland, also president of the Eastern; vice-presidents, G. W. O. Perham, Bryant's Pond; John W. True, New Gloucester; L. A. Goudy, Portland; secretary and treasurer, S. T. White, West Paris, executive committee, one director of each line.

William T. Cobb of Rockland and J. M. Libby of Mechanic Falls were among the leading speakers.

MARTHA EXPLAINS THE TELEPHONE.

Mis' Marthy, our ponderous colored cook and general factotum, had viewed the installation of the telephone in the dining-room with many misgivings, much muttering to herself and many dubious shakes of the head. Old-fashioned methods were more to her liking and she looked upon all innovations as dangerous experiments and "triflin'."

It was a "four-party" telephone, and after it had been attached to the wall and tested by repeated conversations, the nominal mistress of the house decided she would pay the additional rental and have one of the general line instruments. Mis' Marthy watched the expert unscrew the transmitter box and depart, which feat being accomplished without the house falling down or any other disaster following the perilous "triflin'," she waddled to the kitchen to supervise the work of L'isbeth, her understudy, a negro girl of fourteen, whose chief characteristic was curiosity.

"Wha' dey-alls doin', Mis' Marthy?"

"H'it's de tellyfoam. Hurry up an' peel dem 'ar 'taters."

"Whuffo' dey gwine to have a tellyfoam?"

"Hit's to talk in; doan' bother me no mo'."

"How dem folks gwine hear 'em, Mis' Marthy?"

"You is sho'ly cur'ous. Mis' Blanche she done talk a lot o' foolishness in dat ar' box—I done heard her, p'tendin' lak she talkin' to Mis' Selby 'way down on Deahbohn street—den de 'lectricity in dat 'ar box hear w'at she say, an' dat man gwine take dat box down to Mis' Selby, an' w'en she open h'it, she gwine hear w'at Mis' Blanche say. Go on now, an' peel dem 'ar taters. I'se suttinly s'prised at yo' ign'unce!"—Edward F. Younger in the National Magazine.

THE CHICAGO BRIDGING BOOK.

The Chicago Telephone Supply Company, Chicago, has just issued another edition of its "Bridging Book," ten thousand copies being run. The book is entitled "Crops, Comfort and Telephones." How they are related, being a brief talk on the benefits of bridging telephones, with information regarding construction, installation and care. The book is profusely illustrated, printed on the highest paper and contains information that is instructive and valuable. It will be sent postpaid upon request to those who mention TELEPHONY.

Want Advertisements.

Want advertisements not exceeding twenty words, exclusive of address, will be inserted in these columns for $1.00 each. If over twenty words the rate will be five cents per word.

WANTED—To buy a telephone system, want place to build an exchange, will give reasonable compensation to party for sending name of town. Might purchase interest in exchange if superintendent is needed. Address "F. E. B." care Telephony.

WANTED—To buy second-hand telephone apparatus of every kind. Give price, description and condition of apparatus. Address "BUYER," care Telephony.

WANTED—Thoroughly competent manager for telephone system in South. Must be able to invest $5,000. Address "DIVIDENDS," care Telephony.

WANTED—Two experienced and trustworthy District Superintendents by prominent Telephone Company. Enclose reference, state experience and say what salary expected. Address "TELEPHONE," care Telephony.

WANTED—Position as superintendent of construction gang, Twelve years' experience. References furnished. Address SUPERINTENDENT, care Telephony.

WANTED—Position by practical telephone man understanding every part of telephone work, especially large exchange systems. Address ENGINEER, care Telephony.

FOR SALE—A two hundred drop express type switchboard, little used. Will sell cheap. Address EXPRESS, care Telephony.

FOR SALE—An easy telephone franchise in a good Southern town of 15,000 population; rates to be $2.00 and $3.00 per phone. Address J. C. DICKEY, Tyler, Texas.

FOR SALE—Now operating new central energy plant. Have 800 magneto telephones and eight one-hundred-drop switchboards for sale. Address JOHNSTOWN TELEPHONE CO., Johnstown, Pa.

FOR SALE—One of the finest Orange Groves in Florida, Lake Front, containing 22¾ acres, 1,200 trees. Price $15,000. Address "W. H. S." care Telephony.

FOR SALE—I have for sale several hundred telephones very little used which I will sell cheap. Address "TELEPHONE," care Telephony.

FOR SALE—Second-hand Telephones and Switchboards of various makes, low prices. Address "SALESMAN," care Telephony.